UNIVERSITY STUDENTS WITH LEARNING DISABILITIES: VARIABLES INFLUENCING ACADEMIC SUCCESS

BY

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Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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The purpose of the study was between academic success, measured by cumulative grade point averages (GPA), of university students with learning disabilities (LD students) and the attributes of locus of control, use of university accommodations and services, the value of university mentors, the impact of personal support networks, and involvement in the university culture. Second, the study sought to make inferences to theories of student retention and adult success. A questionnaire comprised of questions related to the variables under study and a locus of control instrument was sent to 221 University of Florida students. Surveys were received from 108 students (49% rate of return).

The results of the study are presented in two major sections. First, data are presented describing the 108

participants. Second, the results of the correlation matrices and multiple regression analysis are presented. Two regression models were tested--locus of control as the dependent variable and GPA as the dependent variable.

The results indicate that the impact of a personal support network significantly ($p > .05$) describes cumulative GPA. No independent variables entered into the locus of control model and only personal network entered into the GPA model, providing an R^2 of 0.078. Further, although LD students made overall use of support services ($M = 5.4$, $SD = 3.0$) on 10 point Likert scale), use of four specific supports was generally low--tutoring and notetaking ($M = 2.8$), counseling ($M = 2.9$), strategy skill instruction ($M = 1.9$), and faculty accommodations ($M = 5.3$). The distributions, other than accommodations, were positively skewed. The value of the four supports was slightly greater. Involvement in seven campus activities was positively skewed and low, except for sports events. Mean involvement ranged from $M = 1.4$ in student government to $M = 5.3$ in sports events.

Recommendations included (a) investigating the effectiveness of specific support services, (b) developing proactive programs emphasizing self-advocacy and interpersonal skills, (c) involving LD students more in campus culture, and (d) providing in-service programs for faculty.

CHAPTER ONE
INTRODUCTION TO THE PROBLEM

The number of students with disabilities in American higher education has increased dramatically over the past 100 years. From an early beginning with Gallaudet University in the middle of the 19th century and continuing with the efforts of the University of Illinois to create an architecturally barrier-free campus for returning World War II servicemen in wheelchairs (Jarrow, 1993), the numbers of college students with disabilities have slowly increased. In recent years, this growth has been more dramatic. According to a 1990 study by the U.S. Department of Education, 10.5% of all students in higher education are now students with disabilities (Jarrow, 1993). Within 5 years of graduating from high school, approximately one quarter of all graduates with disabilities are now enrolling in at least one course offered at an institution of higher education (D'Amico & Blackorby, 1992; Henderson, 1995). The majority of this growth has been the increasing numbers of students with learning disabilities taking the step of continuing their studies in a postsecondary education setting (Vogel & Adelman, 1992). Because of the growth of students in the public school system identified as having learning disabilities, it is expected that the percentage of

college students with learning disabilities will continue to increase as these students complete their high school programs (Satcher, 1992a).

A number of reasons account for the increasing growth of students with disabilities in postsecondary education. First, over the past 20 years there has been an emerging group consciousness among people with disabilities (Dalke, 1991). This consciousness has been accompanied by the realization that education after high school is more important than ever. Second, an increasing number of students with disabilities have enrolled in college preparatory and vocational educational programs (Fairweather & Shaver, 1990), supplemented with comprehensive transition plans (Miller, Corbey, & Asher, 1994). Third, federal programs and mandates have led to increases in the quantity and quality of cooperation between high schools and postsecondary institutions (Fairweather & Shaver, 1990). Legislation of particular importance to institutions of higher education is Section 504 of the Rehabilitation Act of 1973 (Jarrow, 1993). Section 504 of the Act requires that all programs in an institution of higher education be accessible to students with disabilities.

Institutions of higher education have responded to the growing enrollment of students with disabilities by instituting a variety of accommodations and supports intended to remove any architectural, attitudinal, and programmatic barriers that students could encounter. Most

often, emphasis is placed on removing architectural barriers as they are the most obvious, present the clearest solutions, and are generally the easiest to implement (Jarrow, 1993). Institutions also have attempted to remove programmatic barriers by providing students with disabilities, in particular those with learning disabilities, a variety of accommodations and support services.

By the late 1980s, most 2- and 4-year colleges and universities were offering a broad variety of services and accommodations for students with disabilities. Supports most often provided were tutoring, test administration, consultation with faculty, reader and note-taking services, and priority registration (Woods, Sedlacek, & Boyer, 1990). Accommodations most often provided were extra time on examinations, assignments, and individual course requirements; alternate test formats; and course substitutions (Woods et al., 1990). There has been, however, some concern as to the comprehensiveness and effectiveness of many of these programs (Mangrum & Strichart, 1988).

Statement of the Problem

The numbers of students with disabilities entering postsecondary educational settings have increased dramatically over the past decade. The majority of these students are students with learning disabilities (Vogel & Adelman, 1992). This dramatic increase in numbers of

students with learning disabilities has been accompanied by major increases in the variety of services and supports provided by colleges and universities for students with disabilities (Yost, Shaw, Cullen, & Bigaj, 1994). This increase in support services among colleges and universities, Vogel (1982) noted, has been in response to "two powerful sources of pressure": (a) the community of concerned adolescents with disabilities, their parents, adults with disabilities, and professionals and (b) the passage of regulations to enforce Section 504 of the Rehabilitation Act of 1973.

Despite the proliferation of services for students with disabilities, the efficacy of these supports has been questioned (Brinckerhoff, Shaw, & McGuire, 1992; Woods et al., 1990; Yost et al., 1994). The few research studies on support services and accommodations for students with disabilities in postsecondary institutions have found that there is considerable variance in the range and type of programs (Nelson & Kraft, 1989; Yost et al., 1994) and that few institutions offer comprehensive programs of supports (Mangrum & Strichart, 1988). In general, the development of service delivery practices on the postsecondary level seems to have been haphazard at best with the end result analogous to a patchwork quilt. Further, McGuire, Norlander, and Shaw (1990) noted that although colleges and universities sincerely have been attempting to meet the needs of students with disabilities, their service delivery programs often

have not been grounded in theory nor supported by evaluation data.

A number of scholars observing college students with disabilities have noted the paucity of empirical research during the past 20 years concerning their collegiate experiences and the effectiveness of the support programs developed for them (Fairweather & Shaver, 1990; Gajar, 1992; Yost et al., 1994). During this time, the research on postsecondary students with disabilities has generally followed one of two paths (West et al., 1993). First, postsecondary institutions have been examined, almost exclusively via self-report surveys, for the types of services and accommodations offered. Second, many researchers have described the problems and postsecondary service needs for specific populations. Few studies have sought student involvement and fewer yet have asked students to evaluate the effectiveness of specific accommodations efforts afforded by their school, to voice their satisfaction with specific services, interventions, and accommodations, or to make suggestions for changes (West et al., 1993; Yost et al., 1994).

With a foundation based on research data and program evaluation, Shaw, McGuire, and their associates at the Post Secondary Learning Disabilities Center along with Vogel and Adelman (Vogel & Adelman, 1992; Vogel, Hruby, & Adelman, 1993) have theorized that postsecondary support services incorporating metacognitive processes, social skills

development, and self-determination will increase the rate of academic success and student retention over those programs incorporating services associated with dependency on another person or piece of equipment (Brinckerhoff et al., 1992, 1993; Cullen et al., in press; Shaw, 1996).

It is evident that considerable research on the effectiveness of postsecondary support services and accommodations for students with disabilities needs to be undertaken. Questions related to Shaw and Vogel's theories of the effectiveness of specific supports, the influence of high school preparedness, personal support structures, and the perseverance of the student need to be answered. Further, the goal of postsecondary services is not necessarily college success but to prepare a student with disabilities for life after graduation. Future research, therefore, needs to address whether current supports and accommodations are addressing this goal. It is the intent of this study to investigate the theories related to academic success proposed by Shaw and Vogel, regarding the relationship of these services and other noninstitutional variables on the college academic experiences of graduates with learning disabilities, and the theory of adulthood success proposed by Gerber, Ginsberg, and Reiff (1992) and student retention theories of Astin (1984) and Tinto (1993).

It is important for a number of reasons that these questions be addressed promptly. First, there is growing external pressure on postsecondary institutions for program

accountability. More legislatures and college governance boards, in a climate of decreasing revenues, are demanding an accounting for dollars spent in higher education. Second, the postsecondary institutions themselves have a need and desire to continually improve the quality and impact of their services. Third, as the current and future labor and employment markets continue to place greater importance on a college degree (Zemsky & Oedel, 1994), it will be imperative that students with disabilities be provided effective supports so they too can effectively compete in the ever-tightening labor market. Fourth, institutions of higher education are in greater competition with each other. Young adults with learning disabilities, estimated in 1980 to be over 16 million, may be a new and important source of students for many of these institutions (Satcher, 1992a). Fifth, if postsecondary institutions wish to tap this new source of students, it behooves the school to better understand this group of students and acquire more knowledge about resources to maximize their talent. Finally, college students with learning disabilities need to be provided the most effective and comprehensive theory-based supports and accommodations possible. This can only come with the institution's knowledge of research-proven best practices.

Statement of Purpose

The purpose of this research was to investigate theories related to postsecondary academic success of

students with learning disabilities as associated with the effects of college and university supports and accommodations provided students with disabilities and other variables suggested by theory, in particular the students' support systems, involvement in university culture, and their self-determination. Specifically, the research design addressed the following questions:

1. Is there a relationship between academic success of university students with learning disabilities and the usage they make of university supports and accommodations for these students?

2. What relationship exists between the self-determination of university students with learning disability and their academic success.

3. What relationship exists between the academic success of university students with learning disabilities and personal support networks, support of mentors, and involvement in university-endorsed activities and events.

Rationale of the Study

Although research data are beginning to provide some evidence that the accommodations and support programs developed by postsecondary institutions may, in aggregate, facilitate academic success for those who make use of the programs, few studies have been conducted that have studied the effects of specific supports and accommodations and other variables not controlled by the institution on the academic and postgraduation successes of students with

learning disabilities. There is, however, some empirical research and theory that provide support to the questions raised in the statement of purpose for this investigation.

Vogel and Adelman (1992), in a follow-up of an earlier study (Adelman & Vogel, 1990) addressed the issue of academic success of students with learning disabilities. Using a matched-pair design, the researchers compared a set of 62 students with learning disabilities (the LD group) with a matched sample of 58 students without disabilities (the MS group), matched on gender and ACT composite score. The researchers found that high school academic preparation for both groups was not significantly different except that students with learning disabilities took significantly more developmental math courses. Both the LD and MS groups had similar academic successes in college. It was found that 33% of the LD students had graduated as compared to 25.5% of the MS students. This was not a significant difference. However, almost 3 times more MS students (51%) failed academically compared to the LD group (18%), $x^2(1)=11.23$, $p < .001$. One major difference, although not statistically different, was that students with learning disabilities took almost 1 year longer, 6 years rather than 5, than the MS group to complete their undergraduate degrees. Further, the LD group had a significantly higher graduation grade point average (GPA) than did the MS group.

In summary, Vogel and Adelman theorized that some of the strategies that have been developed by the college to

identify and assist students with learning disabilities have led to the academic success of the students with disabilities. Although their study was not designed to compare the effects of specific strategies and supports, the researchers surmised that because the only difference between the matched pairs was access by the LD group to college-provided supports and accommodations, this accounted for the greater academic failures of the MS group.

In a recent study, Yost et al. (in press) surveyed 694 practitioners involved in service delivery to students with learning disabilities at the postsecondary level. Four hundred practitioners completed and returned the 34-question survey. Their survey results revealed that practitioners are offering a wide variety of supports to students with learning disabilities. Among the variety of supports, tutoring was found to be the strategy most frequently used. However, Shaw and his associates (Shaw, Brinckerhoff, Kistler, & McGuire, 1991; Cullen, Shaw, & McGuire, in press) have asserted that subject area tutoring was a "band-aid" strategy of continuing dependency and does little to enhance the development of strategic and problem-solving skills that transfer across curriculum. Rather, they theorized, practitioners should rely more on cognitive-based strategies--such as study, time management, and note-taking skills--that foster independence and self-reliance and programs that build social skills and self-determination (Shaw, 1996; Shaw et al., 1991; Yost et al., 1994).

These strategies, Shaw and others (Adelman & Vogel, 1990; Buchanan & Wolf, 1986; Gajar, 1992; Gerber, Ginsberg, & Reiff, 1992) theorized, would better prepare graduates with learning disabilities for employment and independent adjustment in the community.

A research study by Greenbaum, Graham, and Scales (1995) has provided some insight into the theories proposed by Shaw, Vogel, and Gerber and the effectiveness of particular supportive strategies. Greenbaum and associates used telephone interviews to survey the college and postcollege experiences of 49 graduates with learning disabilities at the University of Maryland who had received assistance from the campus office of Disability Support Services. The graduates had attended the university between 1980 and 1992. During the telephone interview, the former students were asked questions related to (a) life at college, (b) social experiences during college, (c) academic paths and majors, (d) their reasons for disclosing a learning disability, and (e) the services and accommodations provided by Disability Support Services used while in college. The researchers also reviewed the student records of the office of Disability Support Services and the academic records for each of the 49 students.

The results of the study were similar to those of the 1992 study of Vogel and Adelman. The investigators found that most of the participants had adjusted well to the demands and complexities of college life. Integration in

the social and cultural life of the university setting was the same as with the general student body. Further, the graduation rate of 67% for the students with learning disabilities was equal to that of the general student body. A significant difference was found in the years, 5.5 years as compared to 4.5 years, to complete a degree program by the graduates with learning disabilities and the general student body during the same time frame. These findings support the Vogel and Adelman (1992) study, which found approximately a year difference in graduation between their matched groups of students.

Greenbaum et al. also asked the graduates what accommodations and supports were used while attending the university and which were the most and least helpful. Most helpful were testing accommodations and priority registration. Least helpful were tutoring, note taking, and counseling. Possibly, as Yost et al. (in press) have suggested, these students along with others at different postsecondary institutions recognized the dependency and lack of generalization afforded by tutoring.

Greenbaum and associates also asked those surveyed to explain what noninstitutionally provided variables helped them most during college. The factor most often noted by the responding graduates was their own perseverance and determination (37%). The next two most helpful factors were the supports of family and/or friends (20%) and the personal attention and assistance from either professors or the staff

of the office of support services for students with disabilities (18%). The researchers concluded that these factors, as suggested by theories of postsecondary and adulthood success, may account for much of the educational success of the surveyed graduates with learning disabilities.

The conclusions of Greenbaum et al. (1995), Yost et al. (in press), and Vogel and Adelman (1992) are supported by the earlier research by Astin (1993) and Tinto (1993) on student retention in postsecondary settings. The theories of both Astin and Tinto describe the importance of social integration and the culture of the postsecondary institution on the successes of all college students and that these may have particular impact on students with disabilities.

Astin identified the residential experience and student involvement with peers and with faculty as factors that increase the likelihood that a student will graduate. His observations and research led him to formulate a theory of student development based on the individual's involvement with the campus environment (Astin, 1984, 1993). Astin referred to involvement as the amount of physical and psychological energy that a student devotes to the educational experience. A student who is highly involved directs considerable energy to such activities as study, social events on campus, participation in student organizations, and interaction with faculty and fellow

students. In Astin's model, involvement is critical for the student's learning and development.

Tinto (1993) formulated and refined another perspective on college success that provides broader sociological conceptualization. He theorized that students depart from college when they no longer are socially and academically integrated with others in the college community and when they no longer share the dominant values of the institution. He postulated that student retention or attrition is a byproduct of the student's formal and informal interactions with the college and outside communities. His model of student retention holds that formal and informal interaction between students and faculty and between a student and peers are critical variables.

Tinto's interactive model suggests the importance of the type of culture expounded and practiced by the institution via the formal programs and behaviors established or supported by the institution and the informal networks and attitudes formed by and on the part of faculty and staff. Institutions can effectively alter the prevailing culture and thereby increase the successes of enrolled students.

The theories of Tinto and of Astin provide a basis of understanding for much of the findings and conclusions of the researchers that are elaborated in this section. The conclusions are further supported by a theory of employment success of adults with learning disabilities suggested by

Gerber and associates (1992). Their model suggests that control of one's life is directly related to the likelihood of employment success.

Unfortunately, few published research studies have focused on how programs and accommodations designed to assist and facilitate the successes of students with learning disabilities have sought to measure the impact of support services and other noncognitive variables as suggested by theories of postsecondary and adulthood success (Shaw, 1996). The results of this study should add to the body of knowledge and to the theory supporting quality postsecondary programs for students with learning disabilities.

Definition of Terms

Counseling services are the advisement, job search and placement, assessment, special orientations, and registration services provided by the university.

Developmental labs provide training in learning strategies, note taking, time management, and organizational strategies.

Equipment supports are a broad variety of specialized equipment and materials developed by manufacturers to assist people with disabilities.

Mentor(s) refers to an individual or individuals who are our trusted guides or counselors.

Personal support network or social ecology is an informal network of "significant others" in a person's life. These people provide encouragement, guidance, and support.

Program and course flexibility accommodations are substitutions allowed, based an individual appeal, in regard to state mandated requirements, such as the College Level Academic Skills Test (CLAST) and the Gordan Rule, and/or university requirements for a specific major and/or degree.

Self-determination is the ability to define and achieve goals based on a foundation of knowing and valuing oneself (Field & Hoffman, 1994). Self-determination is the attitude that leads to defining goals and the ability to achieve those goals.

Student-centered supports are individual supportive provisions in a specific class or classes offered to a student with disability when requested by that student (Weiss & Repetto, 1995). Examples are alternate testing, extended time on tests and assignments, tutors, and note takers.

Student with a disability (person with a disability) is defined by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. A person with a disability is someone with a substantial limitation in one or more major life activities. A person is considered to be a person with a disability if he/she has the disability, has a record of the disability, or is regarded as having the disability (Jarrow, 1993).

Student with a learning disability is defined in 1988 by the National Joint Committee on Learning Disabilities (NJCLD) as "a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span" (Block, 1993, p 69).

University of Florida Student with a learning disability is a student with a

> disorder in one or more of the basic psychological or neurological processes involved in understanding or in using spoken or written language. Disorders may be manifested in listening, thinking, reading, writing, spelling, or performing arithmetic calculations. Examples include dyslexia, dysgraphia, dysphasia, dyscalculia, and other specific learning disabilities in the basic psychological or neurological process. Such disorders do not include learning problems which are due primarily to visual, hearing, or motor disabilities, mental retardation, emotional disturbance, or an environmental deprivation. (State University System of Florida, 1995, p. 19)

Delimitations of the Study

The study is delimited by three restrictions. First, it is restricted to one institution of higher education, the University of Florida. The university is a public land grant institution enrolling over 35,000 students. Research on support services and accommodations for students with disabilities in postsecondary institutions has found that there is considerable variance in the range and type of programs(Yost et al., 1994). Therefore, the accommodations

and supports offered students with learning disabilities at the University of Florida may differ from those offered at other postsecondary institutions. Second, the study was restricted to students with learning disabilities. This group accounts for the majority of students with disabilities attending most postsecondary institutions. Third, the study was delimited to gathering data on enrolled students with learning disabilities.

Limitations of the Study

The results of this study may not be generalized to students with other disabilities or other postsecondary institutions without systematic replications with those populations. A second limitation is that students with disabilities are not required to disclose their disability to the institution. As a result, self-reporting has resulted in discrepancies in describing the actual numbers of students with disabilities enrolled in postsecondary institutions (Jarrow, 1993). Miller et al. (1994), working with high school students with disabilities planning to attend college, found that approximately 12% did not plan to disclose their disability. A third limitation is that the results may be affected by those students who did not respond to the survey requests. A forth limitation is that nonlinear regression models were not tested. It is possible that a nonlinear model would have more appropriately described the relationships between the variables tested.

Lastly, other constructs for self-determination rather than locus of control may have more appropriate.

Summary

The number of students with learning disabilities attending institutions of higher education have increased dramatically in the past few decades. These institutions have responded to the growing enrollment of students with disabilities by instituting a variety of accommodations and supports intended to remove any architectural, attitudinal, and programmatic barriers encountered by the students. However, research has shown that there is considerable variance among institutions in regard to the type, range, and comprehensiveness of support programs and accommodations for students with learning disabilities. Some researchers have also questioned the efficiency of these supports. Rather, they have theorized that support services should be focused on the self-determination, self-reliance, and social skills. Currently, there is a need to study the effectiveness of these support services and accommodations in assisting students with learning disabilities in successfully pursuing their academic and postgraduation goals.

Overview of the Remaining Chapters

The process of development and implementation of the research design is detailed in the forthcoming chapters. Chapter Two provides a review and analysis of pertinent research in the areas of college students with learning

disabilities, faculty perceptions and supports, postsecondary support programs and accommodations, self-determination, and general student retention theory. In Chapter Three, the methodology, including the hypothesis, sampling design, instrumentation, data collection, and statistical procedures, is described. A description of the results and empirical findings of this research study is presented in Chapter Four. Finally, Chapter Five consists of a discussion of the results and implications of the study and recommendations for further research in the area of postsecondary support services and accommodations for students with learning disabilities.

CHAPTER TWO
REVIEW OF THE LITERATURE

Introduction

The research and writings of scholars in the field of postsecondary programs for students with learning disabilities, although somewhat limited, were important to the development of this research study. Chapter Two provides a comprehensive and critical analysis of this important research and literature.

Section one of this chapter addresses a number of issues and concerns of adults with learning disabilities. The second section covers the transition process of students with learning disabilities continuing their education at the postsecondary level. The third section of the chapter reviews the postsecondary education environment in respect to students with learning disabilities. In particular, the following section describes studies of the perceptions of students with learning disabilities in regard to their experiences in institutions of higher education. The last three sections establish a theoretical framework on general student retention, the theories related to success on the part of students and adults with learning disabilities, and the influence of self-determination.

Selection of Relevant Literature

Although students with disabilities have been in attendance at institutions of higher education since the 1800s, it has been only since the mid-1980s that their numbers have increased dramatically (Vogel & Adelman, 1992). The review of the literature presented in Chapter Two reflects this time frame. All relevant research in the past 10 years, the period from 1985 through 1996, was examined. Sources of the literature review were Dissertation Abstracts International, Educational Resources Information Clearinghouse (ERIC), and Resources in Education (RIE). Further, the most recent 5 years of the Exceptional Children, Learning Disabilities Quarterly, Journal of Learning Disabilities, Journal of College Student Personnel, and the Journal of College Student Development were checked by hand.

Adults with Learning Disabilities

The passage of PL 94-142 in 1977 brought the nation an awareness of the needs of students with disabilities. This awareness and desire for improving the current educational environments of the majority of students with disabilities in the public school system spawned a flurry of research efforts in schools and universities across the nation. The majority of this early research activity centered on studies of primary and secondary grades. Little attention was given to the functional deficits of adults with learning disabilities (Malcolm, Polatajko, & Simmons

(1990). However, the past decade has seen greater research attention being given to adults with learning and other disabilities. Vogel (1990) reported an increase in the number of research, opinion, service, and program articles published about this population. This activity, she noted, was due to (a) new legislation, (b) proposed changes in the definition of learning disability, (c) advocacy groups, and (d) recent federal and state funding in the area of transition. This literature has, in many areas, heightened the clarity of our understanding of the adult with a learning disability.

Gajar (1992), in an extensive review of the literature, concluded that adults with learning disabilities (a) do not outgrow the disabilities although many do learn and/or develop strategies allowing them to more effectively deal with and compensate for their disabilities and (b) often have continuing problems in academics, employment, and social-emotional relationships. Topically, the writers of this literature addressed issues of employment, social-emotional relationships, factors of success, and postsecondary and continuing education. Gajar (1992) found that only a few articles reported the data and results of longitudinal research studies.

Follow-up Studies of Adults with Learning Disabilities

Researchers of early longitudinal studies tended to paint a less than acceptable picture of life for an adult with a learning disability. The picture was one of

unemployment, underemployment, continued living with parents, and unsatisfactory personal relationships (Fadard & Haubrich, 1981; Sitlington & Frank, 1990; White, 1992). Mithaug, Horiuchi, and Fanning (1985) revealed that 69% of the 1978 graduates of special education programs, who were employed in Colorado, worked at the minimum wage. These results were echoed in a 1985 study by Hasazi, Gordon, and Roe. Hasazi et al. found that 5 years after exiting from high school, only 30% of former Vermont students held full-time jobs, most often in unskilled labor or service occupations.

The results of more recent follow-up studies of adults with learning disabilities have shown improvement in the lives of these young adults. However, the picture is not as clear as the earlier picture of posthigh school graduate life. The results of some studies have tended to conflict.

Sitlington, Frank, and Carson (1993), as part of a 5-year statewide follow-up study, sampled 938 young adults with disabilities from the 1985 and 1986 graduating classes in Iowa. Of this number, 737 had a learning disability. Of the youths with learning disabilities, 77% were employed competitively generally as laborers (37%), service workers (32%), trade workers (12%), and craftsmen (8%). Furthermore, 62% were living with parents or guardians while 28% had their own or shared a residence. These results were similar to a 2-year follow-along study of a rural portion of a mid-Atlantic state (Karpinski, Neubert, & Graham, 1992).

They found that high school graduates with mild disabilities were "reasonably successful" in finding and maintaining employment, 81% being employed a mean of 39.7 hours per week. Seventeen percent had continued their education at a postsecondary institution or in a continuing education program, and 69% were living at home or with someone else.

The most comprehensive nationwide follow-up studies were a series of investigations, referred to as the National Longitudinal Transition Study, by SRI International under contracts with the Office of Special Education Programs (OSEP), (Wagner, 1989). The study is the first in providing comprehensive information about youths with disabilities in regard to secondary education programs, social integration, employment, and educational achievements in both secondary and postsecondary schools. In the study, 12,648 high school students in special education programs were contacted during the 1985-86 and 1986-87 school years. Information was gathered from telephone interviews with parents of these youths, a survey of educators in the schools they attended, and information drawn from school records. Partial or completed data were obtained on 7,206 students in 1985-86. It is not the intent of this section to fully describe the results of these studies. However, some of the results particular to those youths with learning disabilities in the 1985-86 school year bear description. Wagner (1989) revealed that 61% had graduated from and 39% had dropped or aged out of high school. This was significantly lower than

the national mean of 71% for all high school students during the same time frame. Fewer than 17% of the exiters with learning disabilities, who were out of school more than one year, were reported to have taken any postsecondary schooling in the past year. This was significantly less than those youths with speech, visual, hearing, or orthopedic impairments and those youths without a disability. The NLTS data revealed that of youths with learning disabilities, who had been out of high school for more than a year, 19.3% were working part-time and 37.9% were working full-time for pay.

In the ongoing analysis of the NLTS data, D'Amico and Blackordy (1992), using logit analysis, determined that after 3 to 5 years out of high school, 27% of youths with disabilities had taken at least one course in a postsecondary institution as compared to 62% of youths without a disability. Youths with disabilities also lagged behind their nondisabled peers in terms of employment. Youths with learning disabilities, however, had made considerable employment gains, both in employability and the quality of employment. D'Amico and Blackordy (1992) found that they were on a par with their nondisabled peers, 70.8% and 68.9% respectfully. Importantly, there was also a dramatic shift, but still behind nondisabled youths, to full-time employment in more respected occupations.

More recently, Levine and Edgar (1994) reported some of the findings from the first 3 years of their First Decade After Graduation Project. The sample in the project

comprised 2 cohorts of young adults with and without disabilities, the 1985 and 1990 graduating classes, in the state of Washington. The preliminary results revealed that 2 years after graduation for the 1990 cohort, 72% of the males and 56% of the females with learning disabilities had found employment as compared to 56% and 63% respectively for those without disabilities. For the 1985 cohort at 7 years out of school, the percentages were 88 for males and 74 for females with learning disabilities and 87 for males and 82 for females without disabilities. Employment was defined as working a least 1 hour a week in a position that pays a wage. The majority of youths with learning disabilities in both cohorts, 95% of the 1985 and 60% of the 1990, worked more than 20 hours per week. Although the data showed that employment levels were similar, youths with learning disabilities significantly lagged their peers without disabilities in attendance in postsecondary educational programs. Of the 1985 cohort, 27.8% of the youths without disabilities had earned a certificate, associate, or baccalaureate degree as compared to 16.3% of youths with learning disabilities.

Employment

Adults with learning disabilities have not found the employment successes in the workplace as have young adults without disabilities. This lack of employability and underemployment is evident in some of the research studies in the prior subsection. However, as was discussed in the

earlier section, young adults with learning disabilities are fast improving their levels and quality of employment. This section will elaborate further.

The early employment patterns were thought to be influenced by lack of self-confidence and social skills (Hoffman et al., 1987), job finding and maintenance skills (Ryan & Price, 1992), and employer (Minskoff, Sautter, Hoffman, & Hawks, 1987). It is uncertain what has accounted for the recent improvements in employment levels. It is possible that the same factors that have spawned greater interest in studies of adults with learning disabilities have also influenced the various parties involved in the employment process. This may be one of the reasons for the recent increases in their employability as reported by Heal and Rusch (1995).

The NLTS data, reviewed in the preceding section, were used by Heal and Rusch (1995) to predict postschool employment. Using a subset of 3,357 out-of-school youths from the data base for a further survey, they used blockwise regression analysis on the data collected from the 2,407 responding youths. The final model, with an overall R^2 of .282, determined that county economic conditions, home backgrounds, personal characteristics, personal abilities, and school experiences were significant predictors of employability. A question not addressed in the analysis was if these factors were influences particular only to those with a disability.

Social-emotional Relationships

Few studies address the concerns of emotional, social, and personal relationships of young adults with learning disabilities (Gajar, 1992). In those that exist, the authors have suggested that they are the main area of concern of young adults with learning disabilities (Chelser, 1982; Clark & Kolstoe, 1995). Chelser's adult adjustment study reported that social relationships and skills and developing self-esteem were first and third in importance in the areas of life in which assistance was needed. Other researchers have found that this population is less likely to participate in social events and make friends (Gerber et al., 1990; Kroll, 1984), suffers more from depression, frustration, and shyness (Hoffman et al., 1987), and has a low self-concept (Blalock, 1982; Cohen, 1994). Yet, in a recent study, Lewandowski and Arangelo (1994) concluded that adults with learning disabilities did not differ from their nondisabled peers when reporting self-confidence and social adjustment. The researchers compared 100 students each with learning disabilities and without learning disabilities on the Social Adjustment Scale Self-Report and the Tennessee Self-Concept Scale. In an earlier 3-year follow-along study as part of the Learning Disabilities Transition Project in Minnesota, Ryan and Price (1992) also found no significantly lower levels of confidence and esteem.

Factors of Success

The majority of the research on self-esteem has focused on isolating negative social and psychological attributes. Few studies have focused attention on the successes of adults with learning disabilities and the impact of postsecondary support programs.

One study that did was by Spekman, Goldberg, and Herman (1992). The three attempted to ascertain why some young adults with learning disabilities achieved success while others did not. Spekman et al. followed a cohort of 50 former students with learning disabilities of the Marianne Frostig Center of Educational Therapy. Data on the adults were collected from case records, personal interviews, parental ratings, and the results of standardized tests. After analyzing the data, the researchers concluded that three themes were prevalent in the successful adult group. They noted that "all three worked in concert to sustain and nurture them, to maximize or enhance their development" (Spekman et al., 1992 at p. 166). The first was a realistic adaptation to life events. This factor was seen in their self-awareness and acceptance of the disability, a proactive approach to decision-making, a high level of perseverance, and an emotional stability coupled with effective coping strategies. The second theme was appropriate goal setting and self-directedness. The last theme was the presence and use of strong support groups, that could be called upon for counseling, guidance, and mentoring.

A second study of traits related to success (Gerber et al., 1992) reached similar conclusions, although the researchers classified the traits differently. A nomination process, using the resources of three nationally recognized organizations for people with learning disabilities, was used to develop a nonrandom sample of successful adults with learning disabilities. From the final pool of 181 adults, 71 agreed to participate in a lengthy interview with over 130 open-ended questions. Gerber and associates found that the distinguishing characteristics of success could, likewise, be categorized into one of three themes with one being the key. As in the Spekman et al. study, the three themes strongly interacted with one another and transcended the entire sample. The blending of the three was an evolutionary process that spanned over a number of years. The key theme was control, which they suggested was "the fuel that fired their success." Control was evidenced in two other themes. The first was the individuals' internalized abilities to take charge of their lives. The individuals' desires, goal orientation and setting capacities, and their abilities to reframe their disabilities in a more positive manner comprised subsets of the internal decisions theme. The second theme was the ability to effectively adapt to the environment. In effect, this was the individuals' effectiveness in expressing or transforming internalized values into actual behaviors. The researchers theorized that the behaviors of the successful

adults were characterized by self-reliance, persistence, matching their skills to their work, effective strategies, and a capable support network.

Involvement in Postsecondary Education

Researchers have shown that youths with learning disabilities have not continued their education past the high school diploma to the same degree as have youths without disabilities (D'Amico & Blackordy, 1992). This, however, seems to be changing. Although still behind their nondisabled peers in total proportions, adults with learning disabilities are now the fastest growing group of students of postsecondary institutions (Henderson, 1995). All indications are that this group will continue its presence on the nation's campuses. A comprehensive review of the literature pertinent to postsecondary education and students with learning disabilities will be examined in the following sections of this chapter.

Transition to Postsecondary Schools

During the past twenty years, the transition of students with disabilities from high school to adulthood has become a national educational priority (Gajar, 1992). Over this period, the view of transition has expanded greatly from Madeline Will's unidimensional position that transition was concerned only with the successful movement from school to work (Clark & Kolstoe, 1995). Current models (Brolin, 1995; Clark & Kolstoe, 1995; Edgar, 1987; Halpern, 1994) incorporate in some fashion career information, employment

skills, community life, personal relationships, and living skills.

An important factor in the transition from high school to adult life is access to and success in postsecondary education. This recognition, coupled with factors delineated in a prior section, has resulted in a dramatic increase in the number of students with learning disabilities enrolling in institutions of higher education. Although still behind their peers without a disability by at least 25% (D'Amico & Blackorby, 1992; Henderson 1995), a majority of all young adults with learning disabilities may enroll in some form of postsecondary education (Aune, 1991).

The Transition Process

Educators have facilitated the quality of the transition process, first, by increasing the accessibility of college preparation and vocational education programs. Second, they have sought to improve the collaboration between secondary and postsecondary institutions (Fairweather & Shaver, 1990). Transition is still not without obstacles. Fairweather and Shaver (1990) suggested three factors which can impede the success of the transition process. First, colleges and universities often do not provide appropriate flexibility in admission procedures or effective support programs to meet the specific academic and counseling needs of this population. Further, they often do not inform interested high school students of what programs and accommodations they do have. Second, they noted that it

is not easy for a student to adjust to a postsecondary environment. Moving from a protective high school setting, which provides needs and services without direct student intervention, to an environment that requires the student to seek out any needed services requires a level of self-determination and advocacy in which many young adults with and without disabilities are deficit. Last, the uniqueness and variety of colleges and universities can easily frustrate a high school in its efforts to create an effective and encompassing transition program.

Factors in Postsecondary Participation

Limited research exists on the characteristics of students with learning disabilities attending postsecondary institutions (Fairweather & Shaver, 1990). In one study, Miller, Snider, and Rzonca (1990) found that students with learning disabilities who are more likely to enroll in a higher education institution were those with higher cognitive abilities, had actively participated in extracurricular activities in high school, and had made prior use of community resources. The authors suggested that these findings were more indicative of the individual who understands his/her disability, possesses a strong self-esteem, and enjoys the education environment. These findings are supported by the studies of others in the field: self-determination (Adelman & Vogel, 1990; Hoffman et al., 1987; Houck, Engelhard, & Geller, 1989), social skills

(Hoffman et al., 1987), and the use of institutional supports and accommodations (Vogel, 1982).

Recently, Halpern, Yovanoff, Doren, and Benz (1995) assessed the importance of a wider variety of variables than had been included in prior research efforts. The research was part of a 3-year follow-along study using a sample of 987 students with disabilities from Oregon, Nevada, and Arizona. Data were gathered on six domains: student/family characteristics, school services received, quality of life in school, school achievement, postschool services received, and quality of life out of school. A logit regression analysis, using 15 potential predictor variables, was used to develop the prediction model. Six predictors were determined to be significant. They were cognitive abilities, quality of high school instruction, effective transition programming, parental satisfaction of high school learning, student satisfaction with their high school experiences, and strategy skills and interpersonal skills. Although they looked at a wider variety of potential prediction variables, their results seem to complement the findings of Miller and associates (1990).

Postsecondary Schools and Students with Learning Disabilities

Federal legislation has greatly impacted people of all ages with disabilities. Young adults enrolled in institutions of higher education and those planning for the transition into this setting have found that prior barriers, whether formal or informal, have diminished because of

federal legislation and the various court decisions clarifying the federal legislation and its related regulations. This section will review the impact of the two major pieces of legislation, Section 504 of the Vocational Rehabilitation Act and the Americans with Disabilities Act.

Federal Legislation--Section 504

Much of the impetus over the past two decades to provide accommodations and supports to college students with disabilities has been a result of the Vocational Rehabilitation Act of 1973 (PL 93-112) (Clark & Kolstoe, 1995). The basic intent of the act is to establish vocational education programs and their funding. Additionally, a number of sections provide support for the principle of opportunity. Section 504, in particular, has given college-bound students with disabilities the opportunity to participate in a college environment that had often been closed to them.

Section 504 of this act states that

> [n]o otherwise qualified individual with a disability in the United States . . . shall, solely by reason of disability, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving [f]ederal assistance. (29 U.S.C. §794)

The implementing guidelines of the act define a person with a disability as having a physical or mental impairment that substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having

such an impairment (34 C.F.R. §104.3(j)(2)(ii)). Subparts A and E of the implementing regulations of Section 504 delineate the obligations and duties required of any posteducational program or activity receiving federal funds.

Subpart A (§104.3-104.4) clarifies the general provisions of the law. It elaborates that the definition of disabilities under the act include that of learning disabilities. Further, it states that students with disabilities are to be provided aids, services, and benefits that are as effective as those provided to others. Postsecondary institutions are required to provide an "equal opportunity to gain the same result, to gain the same benefit, or to reach the same level of achievement, in the most integrated setting appropriate to the person's needs" (§104.4(b)(2)). Subpart E (§104.44(a)) of the regulations pertains specifically to institutions of higher education. These guidelines establish that these institutions must modify academic requirements and methods of evaluation that are discriminatory. The institutions, however, are not required to compromise those requirements and standards that are essential to the course or program or its evaluation.

Together, Section 504 and Subsections A and E of the regulations establish a mandate that institutions remove the variety of barriers, programmatic, architectural, and attitudinal, that students with disabilities often encounter on a college campus. In effect, Section 504 is a program

access statute mandating a number of specific areas of accessibility (Jarrow, 1993). Under Section 504, Jarrow stated, institutions of higher education are mandated to establish nondiscriminating admissions policies and practices, to provide physical access to facilities and activities, and to provide such auxiliary aids and services as may be necessary. Although the regulations to Section 504 supply detailed guidelines along with examples, it fails to address and clarify a number of issues (Roberts & Mather, 1995). Thus, Congress has left it to the courts to resolve the issues on a case-by-case basis. These issues can be classified as substantive and procedural issues.

Substantive issues. One major substantive issue revolves around the interpretation of the term "otherwise qualified." Courts have ruled that simply having a legal disability does not automatically entitle relief from the institution. The applicant must also be "otherwise qualified" to enroll in the program (Rothstein, 1991). In 1985, the appellate court in Traynor v. Walters defined this term to mean an individual who meets the academic and nonacademic standards required for admission and to participate in an educational program (Roberts & Mather, 1995). Earlier, the Supreme Court addressed the issue in Southeastern Community College v. Davis (1979). Davis, a woman with a hearing impairment, requested admission into a nursing program. The Court held that she was not "otherwise qualified" in that the sense of hearing was related to

patient safety and was indispensable in many of the functions performed by a registered nurse. The Court determined that students with disabilities must be able to meet, without regard to their disabilities, the fundamental requirements of the educational program. Since 1979, federal courts have reiterated that it is important to consider the individual's strengths and the specific areas and extent of the disabilities (Scott, 1994).

Making such a determination in the case of an applicant with a physical or medical disability is often fairly straightforward. Determining such eligibility in the case of an applicant with a learning disability is flout with problems (Brinckerhoff et al., 1992). The age, sources, and quality of the documentation supporting the identification and severeness of the learning disability are potential areas of conflict. Courts, faced with resolving such conflicts, have repeatedly deferred to the professional judgment of educational professionals (Scott, 1994).

The second major substantive issue, "reasonable accommodations," is closely related to the first issue of individual qualifications. The Supreme Court in Davis (1979) stated that questions of accommodation are central in identifying the qualified individual with a disability. Substantively, the issues center around individual identification and the costs of the accommodation. Section 504 holds the student responsible for notifying the institution of their learning disability and the need for

supports (Brinckerhoff et al., 1992; Frank & Wade, 1993). They are also responsible for providing the necessary documentation of the disability. Courts have generally held that institutions are not obligated to provide services if the institutions are not informed by the student that a disability exists and that supports are needed (Brinckerhoff, Shaw, & McGuire, 1993; Scott, 1994).

Section 504 and the Davis decision provide little clarification of the issue of the cost-effect a proposed accommodation might have on the postsecondary institution. Although subsequent court decisions provide some direction, a clear-cut formula does not exist (Wenkart, 1993). Further, as the costs of providing services have risen, the issue of cost is increasingly becoming a factor in court decisions. In general, decisions, such as Barnes v. Converse College (1977) and United States v. Board of Trustees of the University of Alabama (1990), have held that cost alone is not an acceptable defense and that the school is responsible for providing meaningful access and services (Scott, 1994). Other courts, as with Rothschild v. Grottenthaler (1990), have held that they must strike a balance between reasonable accommodations and the financial burdens of requiring such an accommodation (Weiss & Dykes, 1995; Wenkart, 1993).

Procedural issues. Courts have also addressed the decision-making processes and procedures implemented by postsecondary institutions in designing accommodation

programs. Some of the issues have been the extent and onset of an institution's responsibilities, institutional policies, student actions, and disability support programs. Reviewing recent court cases, Scott (1994) found that courts have allied the provisions of Section 504 to the actions of both public and private institutions of higher education that receive some form of federal support and to degree and nondegree programs. Further, courts have ruled that these responsibilities commence when the institution becomes aware of the disability of a student (Scott, 1994). Once aware of a student's disability and upon request for an accommodation, the institution must take some documented action. This does not mean that they must, in fact, provide the requested accommodation. A number of court cases have clarified the decision-making process.

One important case, Wynne v. Tufts University School of Medicine (1990), was concerned with testing formats for a medical student with a learning disability. The district court ruled that Tufts University had not presented significant evidence that the student's request to be given tests orally rather than in a multiple choice format would be a "fundamental alteration" to the school's medical program. The appellate court reversed the ruling, finding that the request would, in fact, require "substantial program alterations" for Tufts. A similar conclusion was reached in McGregor v. Louisiana State University in 1992 (Wenkart, 1993). Another important case, United States v.

Board of Trustees of the University of Alabama (1990) involved the procedures and requirements that students with disabilities had to meet in order to receive auxiliary aid. The university required students to submit requests for services a year in advance. The court ruled that this requirement violated Section 504 and that the university must provide auxiliary aids to all students with disabilities regardless of financial need or enrollment status (Brinckerhoff et al., 1992). Additional time on tests was addressed in Dinmore v. University of California in 1989. At issue was the denial of a professor to grant a request of additional test time to a student with dyslexia. Although settled out of court, the university developed a comprehensive set of policies for accommodating the needs of students with disabilities (Brinckerhoff et al., 1992).

Federal Legislation--ADA

The Americans with Disabilities Act (ADA) (PL 101-336), signed into law on July 26, 1990 by President Bush, is viewed as the most significant civil rights legislation in over 25 years (Rothstein, 1991). ADA, because many of its provisions are similar in scope to those of Section 504, is not expected to have a major impact on student affairs issues in higher education (Osborne, 1995; Wenkart, 1993). The law, however, is broader in its application and covers more programs and services than does Section 504. First, ADA applies to all institutions of higher education, not just those receiving federal funds (Wenkart, 1993). Second,

the law broadens the definition of disability and includes a variety of auxiliary aids not covered under 504 (Osborne, 1995). The greatest impact of ADA on higher education will probably be in increasing the awareness of the needs of students with disabilities and of their rights under the laws of the nation (Shea, 1994).

Faculty Interactions with Students with Learning Disabilities

The academic and personal development successes of students in postsecondary settings is directly influenced by the extent and quality of the student's interactions with college faculty (Astin, 1993; Morris, Leuenberger, & Aksamit, 1987; Ruben, 1995; Tinto, 1993). Furthermore, the importance of these interactions may have greater value and impact on college students with learning and other disabilities (Greenbaum et al., 1995; Page & Chadsey-Rusch, 1995; Vogel, Hruby, & Adelman, 1993). If faculty are accepted as tantamount to quality learning, a review of the research related to faculty attitudes, understanding, and willingness to provide accommodations in regard to students with learning disabilities is necessary to the further development of the literature review of this research study.

Faculty attitudes. The attitudes of people toward individuals with disabilities have been the focus of many studies, with researchers generally indicating that these individuals are often received less favorably than their peers without disabilities (Farrell & Harckham, 1988). However, in only a limited number of studies have educators

explored the attitudes of college faculty toward their students with disabilities.

In 1987, Aksamit, Morris, and Leuenberger investigated the attitudes and knowledge related to students with learning disabilities of the faculty and student services professionals at the University of Nebraska-Lincoln. The researchers developed a Likert-type scale questionnaire consisting of 22 items measuring two subscales, attitude and knowledge. Sent to 1,426 faculty and student services professionals, completed questionnaires were received back from 768 staff, a 54% rate of return. Analysis of the responses of the two groups showed that student services personnel had significantly more positive attitudes and better knowledge than did the faculty. Further analysis determined that the attitudes and knowledge of the staff was affected by their university position, gender, prior information, years experience, and previous contacts. Results indicated that women, staff with more years of experience, staff with prior contact with individuals with disabilities, and staff with knowledge about the disability possessed more positive attitudes toward students with learning disabilities. Analysis of a study conducted at nine colleges affiliated with Clemson University provided similar conclusions (Schoen, Uysal, & McDonald, 1987), except that the analysis did not indicate any significant differences in attitudes based upon the faculty member's gender.

The results of a research study by Leyser (1989) expanded on the findings of Aksamit and associates. Leyser surveyed 124 faculty in education and health colleges at a large state university. Questionnaires were sent to all 220 full-time faculty in the two colleges. Surveys were received back from 124, or 56%, of the faculty. Almost 87% of the faculty responded that they had had some contact with college students with disabilities. Interactions with students with learning disabilities were incurred by 35% of the faculty, as compared to over 60% for students with sensory and physical disabilities. Leyser found that faculty were less supportive of admitting students with learning disabilities into their colleges, a total of 57% agreeing to admit, than they were of students with physical and sensory disabilities, in which over 85% were supportive. This response was in agreement with a question about the ability of the three groups with a mild or severe disability. About 70% of the faculty felt that only those with mild learning disabilities were capable of being successful in higher education.

With other studies, investigators have found similar less positive attitudes and expectations concerning the abilities of students with learning disabilities in a college or university setting. The results of Leyser's study complement the similar findings of Miner and Prater (1984), who found that the initial expectations of faculty toward students with learning disabilities were negative.

Farrell and Harckham (1988), albeit using a small sample of 21 university faculty and 58 student services staff, similarly determined that faculty had a significantly lower perception of the abilities of enrolled students with learning disabilities than of those with other disabilities.

In a more recent and material study addressing faculty attitudes toward students with learning disabilities, it was reported that these more negative attitudes had not yet moderated. McCarthy and Campbell (1993), in the research study, surveyed the total population of professional employees at a mid-western land-grant university, a total of 955 full-time faculty and 205 staff. Three hundred twelve replied, a return rate of 28%. Although the very low rate of return necessitates caution when viewing their conclusions, the conclusions support earlier research findings. Over three quarters of the faculty responding reported they had encountered at least one student with a disability during their tenure; 51% reported that the encounter was with a student with a learning disability and 70% reported an encounter with a student with a physical impairment. A significantly greater number felt that they were more inclined to advise a student with a learning disability not to enroll in a particular course over a student with a physical disability, 51% to 38% respectfully. In addition, faculty reported that they felt that students with learning disabilities should be expected to participate as fully as possible in all class activities.

Faculty knowledge about students with learning disabilities. A number of studies tend to reveal the degree of faculty understanding and knowledge about learning and other disabilities in general and the specific needs of students with learning disabilities in their classes. A couple of reasons lend support to this research direction. First, researchers, such as those described in the prior section, have found that faculty attitudes are related to the amount of direct contact and experience with students with learning and other disabilities. Increased contact should, therefore, lead to a greater understanding of needs, and this, in turn, should influence attitudes. Second, some early literature reviews (Morris, Leuenberger, & Aksamit, 1987) revealed evidence that some faculty may be inclined to believe that a learning disability is tantamount to a loss of learning ability or decreased intelligence. Increased understanding of the conditions associated with learning disabilities would help mitigate such beliefs.

In a follow-up to an earlier study (Aksamit et al., 1987), Morris et al. (1987) involved the same 54 random sample population. The 54 participants were randomly placed in either a control or experimental group. The same attitudinal instrument was administered to both groups prior to and at the conclusion of the experiment. Members of both groups were sent printed materials providing limited information about learning disabilities and university services. The experimental group participated in small

group in-services, phone consultations, and received further printed materials, each tailored to meet individual faculty needs. An analysis of variance along with follow-up analysis showed significant differences, as measured by the pre and posttests, in knowledge between the two groups. However, although the attitudes of the experimental group did not significantly increase at the end of the experiment, the attitudes of the control group did deteriorate significantly.

Additionally, research has evaluated differences in knowledge between faculty and student services staff. In a recent survey of 113 developmental educators and student service counselors, two each chosen randomly from the membership list of the American Association of Community and Junior Colleges, Yocom and Coll (1995) determined that both groups were similar in their understanding of the characteristics of learning disabilities. The educators, however, were more knowledgeable of laws related to disability rights. Conversely, other researchers have found that general faculty were often unfamiliar with conditions associated with learning and other disabilities (Aksamit et al., 1987; Baggitt, 1993) and were less informed than student services personnel (Aksamit et al., 1987; Farrell & Harckham, 1988). A recent study comparing print-based and multimedia training programs found that in-services could increase the knowledge and improve attitudes of faculty toward students with disabilities (Wald, 1995).

Faculty accommodations. The impact the faculty has on the collegiate success of all students is without question. Astin (1993) suggested that, other than peer groups, the faculty has the greatest influence over a student's undergraduate development. In the case of students with learning disabilities, this influence extends beyond the guidance and presentation of course materials. It also hinges on the instructor's supportive attitude and willingness to provide course accommodations that may well be one of the keys to the student's ability to succeed.

The value of faculty support is supported in a recent study (Keim, McWhirter, & Bernstein, 1996). The study focused on the impact of academic advising, tutoring, use of computer laboratories, and test accommodations on the academic success of 125 students with learning disabilities at a large southwest university. An analysis of covariance found a significant relationship between low levels of advisement and grade point averages. Increased advisement time, however, was no more beneficial than lower levels of time provided. The study did not find a significant relationship between tutoring or test accommodations and academic success but did find a significant relationship with the use of the computer laboratory.

Matthews, Anderson, and Skolnick (1987), in a nonrandom survey of 100 university faculty interested in students with disabilities, found that faculty generally was willing to accommodate a student with a disability. The questionnaire

requested faculty to respond, either "yes," "no," or "do not know," to a list of potential specific course accommodations. The faculty members responding stated that they would always provide the accommodation to 74% of the items. They would not accommodate the student on 22% of the items. Accommodations most willingly offered were providing a detailed syllabus, tape recording of lectures, use of a proofreader to assist in punctuation and grammar correction, proctored examinations in separate room, and extra time to complete tests. Least willing accommodations were allowing misspellings and poor grammar without penalty, providing a copy of the lecture notes after the class period, allowing the proofreader to improve the writing quality, and allowing an extra credit assignment. How these findings compare with the attitudes and willingness of other faculty members less willing to participate is a question that was not reflected on or addressed. Further, Nelson, Dodd, and Smith (1990), in a survey of 107 faculty at a northwestern college, found differences in faculty willingness to provide accommodations based upon their academic discipline. Faculty in business departments were less amenable than were faculty in the social sciences and in education.

The results of a survey of 92 randomly selected academic faculty in 13 community colleges in Mississippi complement the findings of the Matthews' study (Satcher, 1992b). Provided a list of 20 common accommodations, the faculty was most willing to allow tape recordings of

lectures, use of a notetaker, additional time on examinations, use of pocket calculators and spelling dictionaries, and proctored examination in a separate room. Faculties were least willing to allow extra credit assignments, misspellings and incorrect grammar, or accept an oral, rather than written, assignment.
In general, faculty members were more receptive to requests for accommodations when their college had a formal program serving students with learning disabilities.

The researchers in both studies concluded that the willingness of the faculty was strongly related to the philosophy of the college. Further, they suggested that student services needed to assist faculty, through in-services and individual consultation, in identifying and designing effective accommodations, which maintain the academic integrity of the course.

Summary observations. A number of conjunct observations seem to be in evidence in regard to faculty attitudes toward and interactions with students with learning and other disabilities. First, most faculty members have had more than one contact with a student with a disability (Leyser, 1989; Satcher, 1992b; Schoen et al., 1987). Second, perceptions and attitudes are generally positive (Leyser, 1989; Satcher, 1992b; Schoen et al., 1987) but less so toward students with learning disabilities (Leyser, 1989; McCarthy & Campbell, 1993). Third, factors of gender (Aksamit et al., 1987; Baggitt, 1993), faculty department

(Nelson et al., 1990), contact (Aksamit et al., 1987; Jarrow, 1987; Satcher, 1992b), knowledge (Aksamit et al., 1987; Leyser, 1989), and years experience (Aksamit et al., 1987; Leyser, 1989) influence a more positive attitude. Fourth, faculties are willing to provide accommodations but expect students to participate as fully as possible (Leyser, 1989; Matthews et al., 1987; McCarthy & Campbell, 1993; Satcher, 1992b). Last, they are concerned over their lack of information on identification and potential interventions (Aksamit et al., 1987; Yocom & Call, 1995) and over the academic integrity of their courses (Matthews et al., 1987; McCarthy & Campbell, 1993; Satcher, 1992b). It is evident from this review that faculties, as purveyors of knowledge, advisors, and mentors, have a major influence on all students and can be a positive or negative force on students with learning disabilities.

Supports and Accommodations

In ever increasing numbers since the end of World War II, postsecondary institutions have sought to establish an environment conducive to supporting the needs of students with disabilities. Early efforts were directed more toward the removal of architectural barriers encountered by adults with physical disabilities. In the past twenty years, the focus has expanded to developing programs of institutional supports and accommodations for students with learning disabilities. Hartman and Krulwich (1984) suggested that the individual efforts of these institutions can be

classified into three categories: (a) precollege "prep" programs that provide academic skills training and counseling, (b) a separate academic "track" program, and (c) the regular college academic program with supports. As most institutions of higher education fall into the third category (Hartman and Krulwich, 1984), this section will review the research related to specific supports and accommodations inherent in the support services programs.

Early educational researchers involved in postsecondary investigations (Barbaro, 1982; Blalock & Dixon, 1982; Mangrum & Strichart, 1983a, 1983b; Marion & Iovacchini, 1983) generally found that colleges and universities often were not providing much in the way of supports for students with learning disabilities. For instance, Marion and Iovacchini (1983), surveying over 400 institutions of higher education, found that support programs were, more often than not, a responsibility of the equal opportunity-affirmative action officer. Further, only 26% of these officers devoted more than 11% of their time in administering disability support programs. Support programs generally provided were individual tutoring in academic subjects, tape recorders, typing lessons, and study skills workshops.

By the middle 1980s, the growth of official support programs was far from complete. Beirne-Smith and Deck, for example, from data of a survey of 4-year educational institutions, revealed that 65 of the 173 responding 4-year schools did not provide special services to students with

learning disabilities (1989). Services most offered by the remaining institutions were subject area tutorial (86%), readers (71%), and notetaking (69%). Remedial or study skills courses were offered at only 63% of those schools offering some disability services. The results of a survey sent to a selective group of 336 community college and 4-year institutions belonging to the Association on Handicapped Student Service Programs in Postsecondary Education (AHSSPPE) were more encouraging, even if limited by the sampling population (Bursuck, Rose, Cowen, & Yahaya, 1989). The researchers estimated that about 50% to 60% of all postsecondary institutions were members of this association. As could be expected, most all of the 197 responding schools provided services for students with learning disabilities. Normal components were subject area tutoring (94%), personal counseling (97%), advocacy (86%), and program monitoring (80%). Remedial services were provided in mathematics (78%), reading (77%), and writing (82%). Additionally, 41% of the schools designed individualized educational plans. Woods et al. (1990), in completed surveys from 13 large state universities providing comprehensive services for students with learning disabilities, encountered similar percentages.

More recently, investigators on the expanse of support services for students with learning disabilities have unearthed continuing, but not universal, expansion. In a random sample of 10% of the 4-year colleges and universities

(n=163) listed in the 1982 edition of Profiles of American Colleges, for example, 10% responded that they did not accept students with learning disabilities (May, 1994). Yet, from a survey of all 27 community colleges in Florida, Weiss and Repetto (in press) concluded that all of the colleges provided supports. In order of provision, these were note takers, tutors, reader services, adapted software, and academic and vocational advisement. Skills centers were provided by all of the colleges. Lastly, Mullins (1995), who employed a stratified random survey of 130 2-year and 171 4-year institutions in six southeastern states, revealed that only 11% of the respondents reported offering no disability services. A rank order analysis revealed that of the top 10 supports in 2-year colleges tutoring was most often offered (95%), followed in decreasing order by academic counseling, career counseling, adapted test taking, notetaking, personal counseling, learning study strategies, readers, reduced course load, and faculty workshops. For 4-year colleges, the 10 most often provided services in rank order were academic counseling, tutoring, personal counseling, adapted test taking, career counseling, learning study strategies, reduced course load, notetaking, readers, and faculty workshops.

Probably the most comprehensive analysis of service and support patterns in American colleges and universities was an in-depth nationwide survey of 510 postsecondary learning disability service providers by Yost et al. (in press). The

researchers mailed a questionnaire, comprised of 34 Likert scale items and 13 demographic questions, to 694 practitioners involved with service programs for students with learning disabilities. Practitioners selected were the 576 members of the special interest group on students with disabilities affiliated with the Association of Higher Education and Disability (AHEAD) and 118 practitioners randomly selected from Peterson's Guide to Colleges with Programs for Students with Learning Disabilities. Unfortunately, the researchers did not attempt to randomly survey all institutions. The quality and quantity of services currently being provided by nonspecial interest group of colleges is unanswered in this study. The results revealed that community college and 4-year service programs were very similar. Supports most frequently incorporated into a service program were subject area tutoring (89%), self-advocacy skills (87%), notetakers (83%), academic strategy skills (84%), and readers (69%).

In summary, this body of research has revealed that a majority of colleges and universities provide some level of services and supports for students with learning disabilities. Unfortunately, many of these services tend to continue the dependence of students with learning disabilities on the support of others (Shaw, 1996; Yost et al., 1994). Subject area tutoring, the most prevalently listed support in every study, is such an example. The dependency component of programs is also highlighted by the

lack of activities that address strengthening the student's social skills (Beirne-Smith & Deck, 1989; Bursuck et al., 1989; Gajar, 1992; Yost et al., 1994). Further, the effectiveness and comprehensiveness of many of these programs have been questioned by researchers (Gajar, 1992; Keim et al., 1996; Yost et al., 1994). The answer as to which services work, which do not, or to what degree and for whom have rarely been addressed. Additionally, many of the researchers, from the early days of service supports to the present, have lamented the lack of research in the area of students with learning disabilities in postsecondary settings (Gajar, 1992; Jarrow, 1987; Shaw, 1996; Vogel, 1982; Woods et al., 1990), and particularly in the effectiveness of specific practices on college successes and in linking specific practices with success after graduation (Jarrow, 1987; McGuire et al., 1990; Woods et al., 1990; Yost et al., 1994).

The Theory-based Quality Support Program

The research studies elaborated in the prior section, in conjunction with theories proposed by Brickerhoff, McGuire, Shaw, Vogel, and other scholars of students with learning disabilities in postsecondary settings, provide directions toward a more enlightened landscape in comprehensive and quality support services programming. This section will expound on the tenets of such a quality postsecondary program of service for students with learning disabilities.

Siperstein (1988) suggests that the quality of postsecondary service programs for students with learning disabilities can be viewed from the stages within which the student makes the transition from the high school setting until graduation from college and satisfactory employment. His model proposes that developed services need to account for three transitions. The first transition involves services facilitating the transitional entry into a postsecondary institution. The second transition consists of programs providing support for the student's transition through the postsecondary program toward obtaining a degree. The last transition comprises supports in the furtherance of the transition from college and entry into employment. The three-stage framework suggested by Siperstein will be used in reviewing the literature designing a quality support services program.

The Transition In

Collaboration. Bridging the gap between high school and college can be a traumatic experience for many of those who try (Tinto, 1993). Gathering information on prospective colleges, reviewing this information and making an informed choice, arranging to meet the monetary costs, and then making the physical move and adjustment into the college campus and town are consuming and involved tasks. Coupled with these is the transition into an academic setting that provides great individual choice and freedom but with an

independence that necessitates developed traits of responsibility, self-control, and self-determination.

The transition into a postsecondary setting is often more traumatic for students with disabilities (Brinckerhoff et al., 1992; Fairweather & Shaver, 1991; Tinto, 1993). A well-planned articulation program between area high schools and institutions of higher education can help prospective college students with learning disabilities make informed choices and become prepared for the new collegiate environment. It may well be the key to their future success in the school (Brinckerhoff et al., 1992; Rosenthal, 1986; Sitlington & Frank, 1990; Vogel, 1982). Ongoing collaboration can reduce problems associated with eligibility criteria, gather or highlight important documentation on the disability, provide information on academic programs and support services available, increase awareness of student rights and obligations under federal and state law, and consult on any lack of student self-esteem and self-determination (Aune, 1991; Bursuck & Rose, 1992; VanBiervliet & Parette, 1994). Yet, in a national survey of over 1500 administrators of public secondary special education programs, Fairweather (1989) unfortunately found that 55% did not offer a transition program and that most existing programs focused on school to work transitions.

An effective program, such as the LD Transition Project at the University of Minnesota (Aune, 1991) and the Special

Needs Transition Initiative Program at John Woods Community College in Illinois (Burns, Armistead, & Keys, 1990), would have postsecondary student services working closely with high school counselors and special education staff and meeting with groups of perspective students and parents. The LD Transition Project, for example, begins working with prospective students in their junior year. The program focuses on career and college decision making, determining needs and accommodations and on enhancing academic, self-advocacy, and social skills. Other postsecondary institutions have incorporated a summer orientation program, such as the 6-week Summer Transition Program at Boston University or the 5-week program at the University of Wisconsin-Whitewater, in conjunction with high school collaboration efforts (Brinckerhoff et al, 1993). The orientation program provides an introduction to the postsecondary institution along with comprehensive activities in academic, social, and personal areas to facilitate student success.

Individualized college plan. Siperstein (1988) suggested that an important component of an effective transition-in stage was the design of an individualized college or career plan for each identified student with a learning or other disability. The proposal has received strong support (Bursuck & Rose, 1992; Fairweather & Shaver, 1991; Getzel, 1990; Yost et al., 1995) and is a key aspect of a number of postsecondary service programs (Aune, 1991;

Baggett, 1993; Burns et al., 1990). Based on a 1987 survey of community colleges, Bursuck and Rose (1992) revealed that 58% wrote individualized plans for their students. Using the individualized plan, students would be counseled in (a) identifying their needs, (b) determining specific accommodations needed, (c) identifying any barriers and potential resources, (d) increasing self-determination, and (e) designing a course of study (Baggett, 1993; Siperstein, 1988).

The Transition Through

It is important for colleges and universities to create an environment that is conducive to learning and integrates students into the social system of the college (Astin, 1993; Tinto, 1993). This environment includes faculty interactions, peer relationships, involvement in institutional life, and interactions with institutional programs and policies (Tinto, 1993). Although the specific aspects of each of these will be discussed in detail in a subsequent section, the comprehensiveness of institutional accommodations and supportive programs for students with learning disabilities can affect the academic and integrative successes of these students. These efforts, the second stage in Siperstein's model, facilitate the "management of academic and social changes during college" (Siperstein, 1988). Specifically, he noted that they can (a) facilitate the ease in accessing and using college services, (b) support the adjustment to academic demands,

(c) provide supports in overcoming social problems, and (d) assist the student in becoming active in collegiate activities. A comprehensive plan, based on theories of adulthood success, is inherent in most all quality programs.

Researchers of postsecondary support services for students with learning and other disabilities have suggested that the institution develop a comprehensive service plan. Encompassing a philosophy promoting student independence, the plan involves the support of key campus administrators, individual student planning and monitoring, and a team approach (Baggitt, 1993; Brinckerhoff et al., 1992, 1993; Burns et al., 1990; Rose, 1991; Vogel, 1982; Vogel & Adelman, 1992). Greater student independence is achieved by providing training in self-advocacy skills and cognitive learning strategies. These are coupled, using a scaffolding strategy, with Section 504 supports. The comprehensive plan, therefore, provides for three categories of services: 504 access services, remedial services, and special support services (Rose, 1991).

504 access services. Services and aids included in this category provide the reasonable accommodations requested by a student with a learning disability. Section 504 services account for the majority of services offered by most postsecondary institutions (Rose, 1991). Specific 504 accommodations were discussed in the earlier supports and accommodations section of this chapter. These comprise accommodations by the course instructor, such as extended

time on a test or tape recording lectures, along with aids and services provided by student services. Student services coordinates various accommodations such as tutors, assessment, counseling, note takers, and the use of a variety of specialized auxiliary equipment aids such as large screen computers with a selection of adapted software and loaner equipment. Assessment and counseling are two services that are given greater emphasis in quality comprehensive programs.

Although many students with learning disabilities bring assessment documentation with them, additional psycho-educational evaluation is often necessary. Additionally, evaluation may be necessary in the admissions process, in determining eligibility for services and, later, to assess specific skills. Beirne-Smith and Deck (1989), in their survey of 4-year institutions, found that 71% provided academic assessment, 58% offered intellectual testing, 43% provided vocational assessment, and 40% offered psychological or personality testing. Over one fourth of the responding schools, however, did not offer any form of additional assessment.

Many postsecondary institutions have found it difficult to obtain reliable and valid diagnostic instruments and qualified staff to administer and interpret the instruments (Anderson, 1993; Bursuck & Rose, 1992; Rose, 1991; Rosenthal, 1986; Vogel, 1982; Vogel & Adelman, 1992). Yet, the level of assessment that the institution can provide

plays a significant role in the school's response to the student's request for accommodations (Cohen, 1984; Scott, 1994). Because of this, Anderson (1993) suggested that postsecondary institutions adapt a four-stage assessment process: determining 504 eligibility for services, determining the initial learning disability diagnosis, referral to outside sources for diagnostic testing, and development and implementation of an individual service plan.

Two critical assessment areas are academic achievement and information processing. Specifically, extensive testing should involve receptive and expressive oral and written language, word-attack and reading comprehension skills, mathematical reasoning and computation, verbal and nonverbal concept formation, social-emotional attributes, and written expression (Anderson, 1993; Rose, 1991; Vogel, 1982).

The majority of survey researchers of postsecondary services for students with learning disabilities reported that nearly all institutions provide some form of academic advisement, personal and social counseling, and career counseling and placement. Academic advisement is often provided by faculty in the various academic departments. Some studies, however, have revealed that faculty are not overly informed about learning disabilities nor have complete and accurate information about a specific student's goals, strengths, and weaknesses (Aksamit et al., 1987; Rose, 1991; Yocom & Coll, 1995). Suggestions for

remediation necessary in developing a quality service program are continuing in-service training, college developed materials, and consultation by student services personnel (Bursuck & Rose, 1992; McCarthy & Campbell, 1993; Morris et al., 1987; Rose, 1991; Siperstein, 1988). Another suggestion has been to involve the institution's special education faculty in a consultation model to assist other faculty (Salend, Salend, & Yanok, 1985; West et al., 1993).

Remedial services. The second category of services is composed of instructional support in basic skills areas such as mathematics, reading, and written language. Remedial services are most often provided in a variety of formats from individual strategy-oriented tutoring sessions, group sessions or workshops, mini courses, and developmental courses (Brinckerhoff et al., 1993; Burns et al., 1990; Bursuck & Rose, 1992; Lazarus, 1989; Rose, 1991; Vogel, 1982). Keim and associates (Keim et al., 1996), in their article, suggested that the provision of a computer laboratory can be a valuable component in support programs.

Special support services. Most postsecondary institutions do not address the learning strategy and social-emotional needs of students with learning disabilities (Yost et al., 1995). Nonetheless, comprehensive programs entail a proactive approach, grounded in theories offered by Shaw and Vogel, that offers assistance in improving learning strategy, social, and interpersonal skills (Bursuck & Rose, 1992; Cullen et al.,

in press; Norton, 1992; Rose, 1991; Satcher, 1995; Vogel, 1982; Yost et al., 1994). These programs, furthermore, work with students in the areas of self-determination and self-esteem. A variety of models have been suggested to address social-emotional needs, such as peer advocates (Rose, 1991), self-help support groups (Brinckerhoff et al., 1993; Vogel, 1982), mini-courses (Burns et al., 1990), and computerized interactive software programs (VanBiervliet & Parette, 1994).

The Transition Out

The third transition stage for students with learning disabilities is obtaining a job commensurate with their abilities after receiving their degree. Lately, colleges and universities have started to assist students to a greater extent other than just providing placement services. These institutions have established a collaborative association between student services and the office of career placement and offer a variety of career development training supports and services (Pavone & Rotatori, 1994). Unfortunately, few postsecondary institutions have taken formal steps to coordinate the services offered by the two offices. In a recent random survey of 142 postsecondary schools listed in the 1988 edition of Lovejoy's College Guide for the Learning Disabled, deBittencourt & Bonaro (1995) revealed that 83% of the career development centers (CDC) had some contact with the students services office for students with disabilities, most often on a monthly or

quarterly basis. The two investigators also found that only 22% of the respondents reported that CDC personnel were very aware of the special characteristics and needs of students with learning disabilities, whereas 74% were only somewhat aware of these characteristics.

Siperstein (1988) suggested that efforts in the transition-out stage encompass workshops in career awareness, job search strategy, and job maintenance skills. Workshops in career awareness would address self-assessment, job exploration, and job assessment (Satcher, 1995). Job shadowing, internships, and cooperative programs can also be especially helpful in narrowing career choices (Hitchings et al., 1995; Satcher, 1995). Identification of needed job accommodations and the rights of the individual under ADA can also be covered in the workshop as they are in the Accommodations Planning Team Seminar at the University of Arkansas (Rumrill, Roessler, Boen, & Brown, 1995). Job search strategies workshops would assist students in preparing their resume, cover letters, job search techniques, and the interview process. Workshops on job maintenance would emphasize the importance of work attitudes and behaviors along with interpersonal and social skills (Hitchins et al., 1995).

Cognitive and Academic Profiles of Students with Learning Disabilities

A review of the literature related to the academic characteristics of postsecondary students with learning disabilities reveals few quantitative studies (Barga, 1993;

Dunn, 1995). In an extensive review of more than one hundred studies covering 20 years, Hughes and Smith (1990) found that less than one third of the articles published in this area were data-based studies of the academic and cognitive performance of this group. In general, conclusions reached based on this research seem to suggest that students with learning disabilities are not as successful academically as their peers without disabilities. This section will address this literature.

Mathematics Abilities

It appears that many students with learning disabilities continue to experience problems in mathematics, both in basic computation and application, during their postsecondary experiences. In research studies by Cowen (1988), Gajar (1987), and Ganschow and Sparks (1986), the various authors revealed that college students with learning disabilities scored below the norm mean of the instrument used. Others found that students with learning disabilities had significantly lower standard mean scores as compared to their peers without learning disabilities (Dalke, 1988; Hughes & Smith, 1990). Further, Vogel and Adelman (1993) determined that the applied and computational math skills of the 62 students with learning disabilities in their study were at the 9.8 and 9.6 grade level, respectfully.

Study Habits

Students with learning disabilities in the secondary grades have a paucity of effective learning strategies

necessary to achieve academic success (Mercer, 1991). Research has shown that students with learning disabilities in postsecondary schools, when compared to their peers without disabilities, continue to lack in study and metacognitive skills (Brinckerhoff et al., 1993; Dunn, 1995; Norton, 1992; Wong, 1987).

The lack of good study skills is evidenced in the requests for services by students with learning disabilities. McGuire et al. (1991) analyzed the service requests of 40 students with learning disabilities for three semesters. Overwhelmingly, the students requested assistance in study strategies more than the other categories of requests. Almost 36% of the time spent working with all 40 students was in providing study strategies. However, in another nonrandom study of students with learning disabilities and their counterparts without disabilities at San Diego Mesa College, using a self-reporting study skills survey, the investigator concluded that there were no significant differences in study habits between the two groups (Norton, 1992). Norton did reveal, however, that the students with learning disabilities requested substantially more assistance in basic skills needs. He, however, offered no reasons why the conclusions differed from earlier research. It is possible that although the self-reported study habits of the two groups were similar, there was a greater difference in the effectiveness of those study habits; a consideration that

was not addressed. Second, the conclusion may well have been compromised by lack of randomization in the design.

Notetaking Skills

A number of research studies on notetaking have reported a positive correlation between test performance in class and the amount of information recorded in class notes (Hughes & Suritsky, 1994). Hughes and Suritsky (1994) suggested that good note taking is a complex skill, proving difficult for some people, consisting of listening comprehension, information discrimination, organization, and legible recording. Postsecondary students with learning disabilities, in self-reports, have revealed that good notetaking is often difficult for this group (Cowen, 1988; McGuire, Hall, & Litt, 1991). Hughes and Suritsky (1992), studing 28 undergraduate students without disabilities, randomly chosen from an introductory special education course, and 30 students with learning disabilities, solicited from students served by the Program for Students with Learning Disabilities at Penn State, analyzed the student's notetaking skills on five variables, three related to completeness and two focused on the use of abbreviations. Multivariate analysis and follow up univariate tests indicated that the group with learning disabilities performed significantly lower on all variables.

Reading, Written, and Oral Expression

In their 1990 review of the literature, Hughes and Smith could not find any large scale or systematic studies

related to the reading abilities of students with learning disabilities. Instead, they found that reading scores were provided as part of the demographic profile or for comparing scores across tests. These reports, however, seem to substantiate that reading problems persist into the postsecondary setting. Cowen (1988), in a study of 25 students with learning disabilities, revealed that 20 of the group scored below the norming population mean. Studies by Dalke (1988), Morris and Leuenberger (1990), and Vogel and Adelman (1990, 1992) likewise documented that this population was significantly lower than their peers without disabilities in reading vocabulary and reading comprehension. On the other hand, Dunn (1995) utilizing three groups of at-risk students, students formally identified as learning disabled, students who stated they had a learning problem, and students who were low achievers from two universities revealed no significant differences on reading vocabulary and reading comprehension between the groups.

Students with learning disabilities in institutions of higher education are also very often deficit in written language skills (Hughes & Smith, 1990). Researchers have found they make more spelling, common punctuation, and grammatical errors and have a lesser writing quality than do students without learning disabilities (Cowen, 1988; Dunn, 1995; Richards, 1985; Vogel & Adelman, 1993).

Students with learning disabilities seemingly recognize their writing deficiency. McGuire et al. (1991) found that the greatest need of the students, other than study strategies, was in assistance with written expression. Almost 26% of the time spent providing services to 87% of the group was on improving writing skills.

Comparative Studies of Students with and without Learning Disabilities

In a review of the literature, Pavone & Rotatori (1994) were able to identify only 14 research studies concerning students with disabilities in a postsecondary setting. The majority of these were attitudinal surveys of either the faculty or the students themselves. Other researchers surveyed the types of supports and services provided by the institution. Only two compared grade point averages and attrition of students with and without disabilities. Results of these two revealed that students with disabilities were not as successful academically, but with supports and by the end of their first year the students did improve. Further, Barga (1993) reported that much of the literature on postsecondary students with learning disabilities has focused on deficits of these students and why they fail academically. Data from more recent studies seem to show that students with disabilities may not be all that different from peers without disabilities in the same institution in regard to grade point averages and involvement in college social life.

The Vogel and Adelman study. Vogel and Adelman (1992) compared a group of 62 students with learning disabilities with a matched sample of 58 students without disabilities. The groups were matched on gender and ACT composite score, either an exact match or ± 1 point. The groups were then compared on age, high school preparation and performance, college performance, course load, and graduation rate and time frame. They revealed no significant differences in age, high school transcripts except in the number of developmental math courses taken, and final college grade point average (GPA). Further, there were no significant differences on GPA at the end of the freshman, sophomore, and junior years. The mean GPA of the students with learning disabilities was slightly higher ($p < .059$) at 2.43 than the group without a learning disability, which had a mean of 2.18. Comparisons of graduation rates and times revealed that 33% of the students with learning disabilities had graduated as opposed to 25.5% of the matched set. This was a nonsignificant difference. However, 51% of the matched set had failed academically compared to only 18% of the set with learning disabilities. Last, analysis showed that, because of a significantly lighter course load of 10.2 credit hours compared to 12.6, the set of students with learning disabilities required almost one year longer to graduate than the set of matched students without learning disabilities. Vogel and Adelman hypothesized that the reason for the successes of the students with learning

disabilities in the study was their use of the supports and accommodations provided for them by the college.

The Greenbaum et al. study. Greenbaum et al. (1995) used telephone interviews to survey the college and postcollege experiences of graduates with learning disabilities of the University of Maryland who had received assistance from the campus office of Disability Support Services. The graduates had attended the university between 1980 and 1992. During these twelve years, 81 students had either graduated or otherwise departed the university and had been assisted by the campus office. Of the 81 former students, 49 (62%) agreed to participate in the study. During the telephone interview, the former students were asked questions related to life at college, their social experiences during college academic paths, majors, their reasons for disclosing a learning disability, and the services and accommodations provided by Disability Support Services used while in college. The researchers also reviewed the student records of the office of Disability Support Services and the academic records for each of the 49 students. They found that most of the participants had adjusted well to the demands and complexities of college life. Approximately 90% of the interviewed students had received an undergraduate degree, and more than 20% had either completed or were attending graduate school. Further, the graduation rate of 67% for all 81 students was equal to that of the general student body. A significant

difference, however, was found in the years to complete a degree program by all 81 graduates with learning disabilities and the general student body during the same time frame. The graduates with learning disabilities took approximately 5.5 years to complete their undergraduate degree; whereas the general student body took approximately 1 year less to graduate.

Greenbaum and associates concluded that the participants in their research study were indistinguishable from students without disabilities. As a group, they were socially active during college. More than half, for example, participated in extracurricular activities while attending the university. Further, their general demographics were, in general, no different than those of the general student body.

Perceptions of Postsecondary Students with Learning Disabilities

Few studies have sought to explore the perceptions and experiences of students with learning disabilities as they interact with faculty, school personnel, and institutional policies and programs (Pavone & Rotatori, 1994; West et al., 1993). The existing research studies, however, shed considerable light on the needs of postsecondary students with disabilities and on the various barriers they sometimes encounter.

Institutional Support Services

Research studies surveying student use of services and accommodations for students with learning disabilities

provided by the nation's colleges and universities have found a wide variation in the use and effectiveness of these services. However, students with learning disabilities, in general, appear to be satisfied with and take good advantage of the support services afforded by their institution.

A survey of 761 students with disabilities, of which 46% noted a learning disability, enrolled in both public and private postsecondary institutions in Virginia found that a majority of the respondents expressed satisfaction with accommodations and services (West et al., 1993). Similar findings are reflected in other studies (Barga, 1993; Carlson, 1995; Patterson, Sedlacek, & Scales, 1988).

Satcher and Adamson (1995), reporting on their study in which 177 students with learning disabilities from 13 southwest colleges and universities responded out of a 1250 sampling population, reported that services most frequently or always used were priority scheduling (68%), course scheduling assistance (60%), advocacy assistance (53%), and tutoring (51%). Services never or rarely used were support groups (66%), personal counseling (55%), career counseling (55%), and learning strategy instruction (47%). Accommodations most often or always used were requesting extended time on tests (60%) and using a calculator on math tests (58%). Used least frequently were use of readers for tests (74% never/rarely), modification of a degree requirement (66% never/rarely), use of notetakers (66% never/rarely), audio-taping reading materials (65%

never/rarely), changes in classroom seating (56% never/rarely), and requesting the use of an alternate test format (50% never/rarely).

The data from the Greenbaum et al. (1995) study complements the results of a study by Satcher and Adamson. Their telephone interviews revealed that 86% of the 49 graduates had used one or more available accommodation or service. Used were testing accommodation (78%), priority registration (33%), counseling (29%), advocacy assistance (29%), tutoring (20%), and taped textbooks (18%). The graduates in the Greenbaum study commented that testing accommodations (57%) and priority registration (14%) were the most helpful services. Alternately, a few graduates, between two to four, found test accommodations, counseling, tutoring, and note taking to be of little help to them.

Barriers and Critical Experiences

Although students with learning disabilities are generally satisfied with their collegiate experiences, many have faced major barriers. Over 86% of the respondents in West et al. (1993) reported that they had encountered major barriers while enrolled. Barriers most often reported were (a) a lack of understanding and cooperation from faculty and school personnel regarding requested accommodations and modifications and (b) social isolation and ostracism from faculty and peers. In a more positive vain, nearly two thirds of the respondents felt that services had improved since they had enrolled. Labeling and stigmatization, in

the form of accusations, name calling, and low academic expectations by faculty and peers, were also experienced by the majority of the 9 students with learning disabilities in a qualitative study by Barga (1993). Further, many of the students found their paths blocked, which Barga referred to as "gatekeeping," by individuals and departments attempting to preserve or maintain quality control of the program or department.

General Student Retention Theory

A number of theories contribute to the understanding of student retention and success in postsecondary educational settings. Of these, the interactive theories of Astin and Tinto provide an easily understandable but yet comprehensive description of the various forces involved in student attrition and success.

Astin's Involvement Model

Astin's observations and research led him to formulate a theory of student development based on the individual's involvement with the campus environment (Astin, 1984, 1993). Specifically, Astin identified the residential experience and student involvement with peers and with faculty as factors that increase the likelihood that a student will graduate. Astin referred to involvement as the amount of physical and psychological energy that a student devotes to the educational experience. A student who is highly involved directs considerable energy to such activities as study, social events on campus, participation in student

organizations, and interaction with faculty and fellow students. In Astin's model, involvement is critical for the student's learning and development.

Further longitudinal research on a total of 57 different measures of student involvement has allowed Astin to refine the weight of specific types of involvement. This work revealed that the student's peer group is the single most potent source of influence in undergraduate development and growth (Astin, 1993). Second to the influence of peers is the influence faculty have on student development.

Postsecondary institutions have the ability to institute proactive programs aimed at increasing student involvement. Faculty can be counseled in mentoring and ways to encourage greater student involvement. Further, the institution can adapt policies and activities which can assist and support students. Astin cautioned, however, that any attempts to increase a student's involvement is directly related to the student's perceived locus of control and attributional inclinations (Astin, 1984).

Tinto's Model of Student Departure

Tinto (1993) formulated and refined another perspective on college success that provides a broader sociological conceptualization. He theorized that students depart from college when they no longer are socially and academically integrated with others in the college community and when they no longer share the dominant values of the institution. Inherent in his model is the view of the postsecondary

institution as a set of "systematic enterprises comprised of a variety of linking interactive, reciprocal parts, formal and informal, academic and social" (Tinto, 1993 at 118). He postulated that student retention or attrition is a by-product of the student's formal and informal interactions with the college and outside communities. His model of student retention holds that formal and informal interaction between students and faculty and between a student and peers are critical variables.

Tinto's interactive model suggests the importance of the type of culture expounded and practiced by the institution via the formal programs and behaviors established or supported by the institution and the informal networks and attitudes formed by and on the part of faculty and staff. Programs and behaviors that enhance integration raise a student's goals and strengthen their commitment to those goals and to the institution itself.

Institutions can effectively alter the prevailing culture and thereby increase the successes of enrolled students. Tinto (1993) suggested, in part, that institutions need to institute effective programs for students who are academically at-risk. The distinguishing components of such a program, he stated, are (a) an emphasis on proactive intervention, (b) assessment, monitoring, and early warning, (c) basic skills development, and (d) the development of appropriate learning settings.

The theories of Astin and Tinto provide a theoretical basis toward developing an understanding of the variables associated with the postsecondary educational successes of students with and without learning disabilities. The interaction of active involvement with academic studies, peers, faculty, institutional activities, and programs provide the essential environment necessary for success. A number of the aspects of the theories of Astin and Tinto are encountered in theories of success of young adults with learning disabilities in vocational and posteducational settings. These theories are discussed in the next section.

Theories of Successful Adults with Learning Disabilities

In recent years, researchers have begun to ascertain the key characteristics or traits that have led to or have provided for very productive lives in work and school for young adults with learning disabilities. This research and the theories that have emerged are detailed in this section. They are germane to this research undertaking in that they provide further understanding of key noncognitive components driving the successful postsecondary experiences of young adults with learning disabilities.

One study was by Spekman et al. (1992). Spekman and associates' study, which is discussed in detail in the earlier section on adults with learning disabilities in this chapter, attempted to clarify why some young adults with learning disabilities achieved success while others did not. In their study, the researchers followed a cohort of 50

former students with learning disabilities of the Marianne Frostig Center of Educational Therapy. Recognizing that success was not an absolute state, the researchers considered the degree of accomplishments, relationships, and activities along with the individual's self-perceptions, degree of community integration, and their satisfaction with their current life. The researchers theorized that three intertwined themes were prevalent in the successful adults. These were a realistic adaptation to life events, appropriate goal setting and self-directedness, and the presence and use of strong support groups.

A major study of traits related to success by Gerber et al. (1992), likewise discussed in the earlier section on adults with learning disabilities, developed a similar theory of adulthood success. Success was defined across five variables: income level, job classification, education level, prominence in one's field, and job satisfaction. As in Spekman and associates' study, three themes, strongly interacting with each other, predominated throughout the entire sample of successful adults. The key theme was control, the drive to manage one's life, which they suggested was the characteristic that provided the drive to be successful. Other themes were the ability to take charge of their life and the ability to effectively adapt to the environment.

This comprehensive qualitative study resulted in a model of vocational success for adults with learning disabilities (Gerber et al., 1992; Ginsberg et al., 1996).

As described earlier, a high level of control was necessary for success. The model suggested a set of interacting variables, referred to as internal decisions and external manifestations, characterizing control. The set of variables interacts closely with each other. Internal decisions, conscience decisions to take a stand and attempt to determine the history of their life, are sub-divided into three components: desire (DES), goal orientation (GxOx), and reframing (REFR). Reframing, the authors defined, is "the set of decisions related to reinterpreting the learning disabilities experienced from something dysfunctional to something functional" (Ginsberg et al., 1996, at 209). External manifestations are the transformation of internal decisions into actual behaviors. Four factors lead to a person's adaptability: persistence (PERS); goodness-of-fit (GOF), placing one's self into appropriate environments with potential to enhance one's abilities; learned creativity (LC), that is individualized ways to accomplish tasks; and social ecology (SE), an established personal support network.

The conclusions reached by Greenbaum et al. (1995) have provided further insight into the study of success traits and support of the model of Gerber and associates, in particular those of college graduates with learning

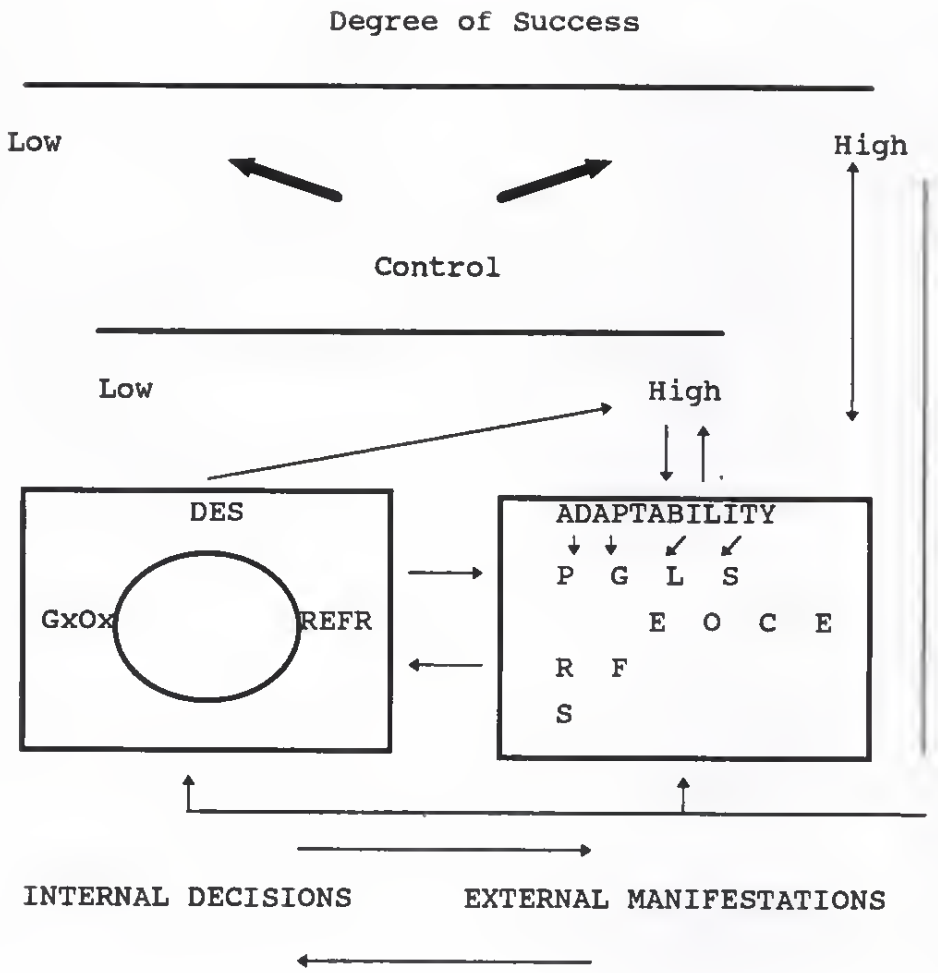

Figure 2-1
A model of vocational success for adults with learning disabilities (Gerber et al., 1992, p. 485).

disabilities. Greenbaum and associates used telephone interviews to survey the college and postcollege experiences of 49 graduates with learning disabilities of the University of Maryland who had received assistance from the campus office of Disability Support Services. The graduates had attended the university between 1980 and 1992. During the telephone interview, the former students were asked questions related to (a) life at college, (b) social experiences during college, (c) academic paths and majors, (d) their reasons for disclosing a learning disability, and (e) the services and accommodations provided by Disability Support Services used while in college. The researchers also reviewed the student records of the office of Disability Support Services and the academic records for each of the 49 students. The study found that most of the participants had adjusted well to the demands and complexities of college life, integrating themselves in the social and cultural life of the university setting.

Among the questions asked of the graduates, Greenbaum and associates asked those surveyed to explain what noninstitutionally-provided variables helped them most during college. The factor most often noted by the responding graduates was their own perseverance and determination (37%). The next two most helpful factors were the support of family and/or friends (20%) and the personal attention and assistance from either professors or the staff of the office of support services for students with

disabilities (18%), networks of individuals that Gerber and associates referred to as social ecology. The researchers theorized that these factors may account for much of the educational success of the surveyed graduates with learning disabilities. The researcher's theory suggested five factors that they believed explain the participant's educational success. These factors were prevalent in the statements made by the participants during the interviews. First, the learning disabilities of the group were mild-to-moderate and their IQ and socioeconomic status were higher than average. Second, the participants were knowledgeable about their disability and the specific supports and services needed. Third, the participants showed a determination and perseverance that would lead to success. Fourth, success was related to the support, guidance, and encouragement that came from "significant" others. Fifth, although support most often came from families, over 20% were able to receive advice and guidance from another person. This other person most often was a college advisor or faculty member in the university's support program for students with disabilities.

Other researchers describing success traits provide further support to the studies described above. Vogel and her associates, in particular, have sought to understand the degree to which postsecondary students are successful and the causes of this success. Their studies (Adelman & Vogel, 1990; Vogel & Adelman, 1992; Vogel, Hruby, & Adelman, 1993)

have theorized that success for these students is influenced by the supportive disability services and educational interventions provided by the institution along with personal characteristics and self-realization.

Further, Barga, in an ethnographic research study of traits contributing to the educational success of nine college students with learning disabilities, revealed that they employed a variety of coping techniques, which could be categorized into benefactors, self-improvement techniques, and strategies of management and study skills (Barga, 1993). Barga found that all of the students identified and subsequently relied on a number of benefactors. The benefactors were individuals who could be called upon to assist them in times of personal and academic difficulty. The most frequently cited benefactor was their biological mother; others were peers, faculty, and personnel in the institution's disability services center. Students also employed self-improving techniques, that is actions the students used to capitalize on improving their academic success in light of their disability (Barga, 1993). Self-improving actions most often employed were seeking help as needed, internal motivation and increased effort, and deliberately placing themselves in situations that enhanced the possibility of success. The last category of coping techniques, strategies of management and study skills, accounted for the majority of employed coping techniques. These were such strategies as the use of technology,

increased efforts in studying, utilizing time management skills, and making use of school and faculty-provided accommodations.

The authors of the studies of the various traits that engender success reviewed above, along with others (Howard, 1992; Smith & Nelson, 1993), have theorized a limited number of important attributes and skills that directly impact the success of adults with learning disabilities. Although the studies exchanged names for these factors and cataloged them differently, all of the studies have theorized the operation of the same set of attributes and skills. This set is (a) social ecology, that is the identification and use of individuals or benefactors as a support system; (b) an honest understanding and acceptance of their abilities and disabilities coupled with a knowledge and use of existing support services and creative coping strategies, Gerber referred to this as goal orientation and reframing; (c) self-perseverance and determination, (d) the ability to set realistic goals, that is goodness-of-fit; and (e) increased effort, discipline, and persistence necessary to convert goals into action.

Self-Determination Theory

One of the traits of success as elaborated in the prior section was self-determination; Gerber and associates named it "internal decisions." It has, in recent years, become a focus of attention in the efforts of public schools, parents, and other interested parties toward involving and

empowering students with disabilities in planning for and taking ownership of their future (Brinckerhoff, 1994; Hoffman & Field, 1995; Schloss, Alper, & Jayne, 1993). In general, these researchers have put forth the theory that self-determination is a major factor influencing personal success in life. This last section will develop further the specific aspects of self-determination and research efforts toward measuring aspects of self-determination.

Self-determination has been defined by Wehmeyer as "acting as the primary causal agent in one's life and making choices and decisions regarding one's quality of life free from undue external influence or influence" (cited in Wehmeyer & Lawrence, 1995, p. 74). Self-determined individuals act autonomously and are self-regulating. They recognize that they are the causal agents of their actions and many of the events in their lives.

Attitudes contributing to self-determination encompass personal perceptions and beliefs about oneself and one's control over the environment that directly impact their behavior. Personal perceptions about oneself include (a) self-awareness--recognizing the controlling self, (b) self-esteem--a sense of worth and competence, (c) self-confidence--belief in one's abilities, (d) self-efficacy--the expectation of mastering a behavior required to produce a specific outcome, and (e) locus of control--the degree to which a person perceives a relationship between individual actions and outcomes (Wehmeyer, 1995).

Within their research studies, investigators have incorporated measures of self-esteem, self-efficacy, locus of control, and combinations of these as effective determents of general self-determination. The results of these studies have provided evidence that these attributes may be employed as useful constructs of a person's level of self-determination. Less clear is which of these or a combination thereof provided a clearer and more predictive construct of self-determination. Part of the lack of clarity may be due to the great variety of individually designed instruments measuring the construct used, which makes it difficult to impossible to generalize across studies using different instruments (Shavelson, Hubner, & Stanton, 1976).

Researchers in a number of research studies incorporating measures of locus of control have, however, determined that locus of control was positively correlated with academic success and was an effective predictor of educational success in postsecondary settings (Chelser, 1982; Ellerman & Johnston, 1988; Huebschmann, 1983; Kanoy, Wester, & Latta, 1989; Lefcourt, von Baeyer, Ware, & Cox, 1979b; Luzzo, 1995; McClelland, Yewchuck, & Mulcahy, 1991; Parish, 1988; Wehmeyer & Lawrence, 1995; Wilhite, 1990). Further, some studies have determined it to be a more efficient predictor than self-efficacy (Wilhite, 1990) and self-esteem (Kanoy et al., 1989).

Furthermore, Kanoy et al. (1989) in a study of 70 students in a small private college determined that locus of control was a more effective predictor for lower-performing students. The study administered the Multidimensional-Multiattributional Causality Scale (MMCS), measuring locus of control developed by Lefcourt et al. (1979b), the Learning Context Questionnaire, measuring cognitive complexity, and the Academic Self-Concept Scale, measuring self-esteem, to the 70 students. The resulting scores from these scales along with high school grade point averages and Scholastic Achievement Test (SAT) scores were introduced into a stepwise multiple regression model as potential predictors of second-semester college GPA, separately, for the academically higher-performing (Group A) and the lower-performing (Group B) students. The stepwise analysis revealed that high school GPA and academic self-concept were the only significant contributors to the regression model for Group A. However, none of the more traditional predictors of academic success entered into the model for the lower-performing students. Rather, taking responsibility for success as measured by locus of control and effort put into academics predicted 46% of the variance in college GPA.

In summary, locus of control seems to be an efficient predictor of academic success on the postsecondary level. Further, it may be a better predictor for lower-performing

students, a category in which many students with learning disabilities may well be found.

Summary

Students with learning disabilities are now the fastest growing segment of the entering freshman classes in institutions of higher education in America (Henderson, 1995). The numbers of students with learning disabilities in postsecondary educational institutions are expected to continue to swell due to the emphasis on transition programming in the public school system and on the greater numbers of high school students with learning disabilities enrolling in college track programs.

Colleges and universities have moved to provide a variety of services and supports for students with disabilities because of the impact of Section 504 of the Rehabilitation Act of 1973 and pressure from students with disabilities, their parents, adults with disabilities, and professionals (Yost et al., 1994). These accommodations comprise a number of possible accommodations by faculty, such as taping lectures and extending assignment and test times, and program services coordinated by student affairs offices, such as counseling, remedial education and learning strategies, tutors, and a great variety of aids and equipment.

However, despite the proliferation of services for students with disabilities, the efficacy of these supports has been questioned (Brinckerhoff et al., 1992; Cullen, in

press; Shaw, 1996; Yost et al., 1994; Woods et al., 1990). The few research studies on support services and accommodations for students with disabilities in postsecondary institutions have found that there is considerable variance in the range and type of programs (Gajar, 1992; Jarrow, 1987; Nelson & Kraft, 1989; Woods et al., 1990; Yost et al., 1994). The development of service delivery practices on the campuses of institutions of higher education seems to have been haphazard at best, with the end result analogous to a patchwork quilt.

A number of problems seem to exist in the current provision of services and accommodations. First, many of these services, such as subject area tutoring, may tend to continue the dependence of students with learning disabilities on the supports of others. Second, few programs address the recognized need to strengthen the student's social skills. Last, faculty, who have a major influence over the development of their students, often have not been provided the necessary information and support to be able to more successfully teach and advise students with learning disabilities.

Vogel and Adelman (1992) and Greenbaum et al. (1995) have indicated that students with learning disabilities are more successful in obtaining their postsecondary educational goals than once thought. The question that begs to be answered is the reason for this success. Vogel and Adelman (1992) theorized that a large degree of this success can be

attributed to the service programs and accommodations currently being provided to students with learning disabilities, coupled with the student' self-reliance and social abilities. Other researchers, including Greenbaum and associates (1995), have theorized that various noncognitive variables have a greater impact on success. These are (a) a family, peer, and mentor support system; (b) the understanding and acceptance of their abilities and disabilities coupled with a knowledge and use of existing college support services; (c) the student's effort and determination; and (d) the ability to set realistic goals and act on those goals to obtain the goal. Shaw and McGuire and their colleagues have put forth the theory that support programs combining cognitive-based strategies along with efforts to increase the self-determination and social interactions of the students will increase retention and academic success more so than programs based on dependency supports, such as subject area tutoring and notetaking. This theory is in concert with the theory of adulthood success of Gerber et al.(1992). However, to date, no study has been published that incorporates the effects of institutional support services with the variables of success delineated by Greenbaum and associates.

The theories of Tinto and of Astin also provided a basis of understanding and addressing this question. The empirical discussion and theoretical models of Astin and Tinto presented in this chapter furnished the parameter for

further research addressing the value of institutional supports and other individual attributes. Such research necessitates incorporating efficient measures of self-determination, such as locus of control, along with assessing the varieties of supports and accommodations, the student's use of them, and quality and variety of the student's interactions with peers and faculty.

Chapter Three provides a description of the specific methodology that was used to address these relationships. The described procedures and statistical procedures and tests provide the reader with a more informed understanding of the results obtained by the study and will allow for any future replications.

CHAPTER THREE
METHODS AND PROCEDURES

Introduction

The purpose of this study was to investigate the relationship between college academic successes of university students with learning disabilities, as measured by cumulative grade point averages, and specific key variables that theories have suggested to be potential factors of success. Specifically, these factors were the influences of institutional accommodations and services provided for them, locus of control as a construct of self-determination, interaction with peers and university employee mentors, involvement in collegiate activities, and a personal support network. This chapter will state the research hypotheses, the description of the subjects, the description of the research instrumentation, the description of the procedures, and the treatment of the data.

Description of the Null Hypothesis

The nine hypotheses are stated below in the null form. These were formulated based on a review of the literature, as provided in Chapter Two, that suggested certain relationships exist between variables.

The following null hypotheses were tested at the .05 level of significance:

H1: There is no significant relationship between cumulative grade point averages of students with learning disabilities and accessed university accommodations and supports.

H2: There is no significant relationship between cumulative grade point averages of students with learning disabilities and locus of control.

H3: There is no significant relationship between cumulative grade point averages of students with learning disabilities and the impact of a personal support network.

H4: There is no significant relationship between cumulative grade point averages of students with learning disabilities and the impact of mentors.

H5: There is no significant relationship between cumulative grade point averages of students with learning disabilities and involvement in university-supported events and activities.

H6: There is no significant relationship between locus of control of students with learning disabilities and accessed university accommodations and supports.

H7: There is no significant relationship between locus of control of students with learning disabilities and the impact of a personal support network.

H8: There is no significant relationship between locus of control of students with learning disabilities and the impact of mentors.

H9: There is no significant relationship between locus of control of students with learning disabilities and involvement in university-supported events and activities.

Participants

Participants in this study consisted of students with learning disabilities enrolled at the University of Florida during the Fall session of 1996. The office for Student Services of the University of Florida assisted by providing a list along with mailing labels of those students with learning disabilities only as listed by the Registrar's office of the University. A total of 237 students with learning disabilities were on the list. Six students had invalid or unknown addresses and were dropped from the survey. Survey packets were mailed to the 231 remaining students on September 6, 1996, using the local address provided by the student. Seventy-one were completed and returned along with 22 returned by the US Postmaster for invalid or with no forwarding addresses. A second mailing was made to 159 students on October 25th, using a second list generated by the Registrar. This list provided corrected addresses for seven students and listed 14 additional students with learning disabilities. Twenty-seven questionnaires were returned completed and the Postmaster returned two for invalid addresses. A third mailing was sent out on December 1st to 80 students who had current addresses in the Gainesville area. Eight were returned by students. In total, 108 completed

questionnaires (49%) were received from a total of 221 students who had good addresses.

Research Instrumentation

Each student on the list received a cover letter and questionnaire. The cover letter was written in accordance with University Institutional Board criteria and was approved along with the questionnaire and survey procedures by the Board on July 24, 1996. The survey consisted of questions related to the independent variables under investigation and the Multidimensional-Multiattributional Causality Scale (MMCS) (Lefcourt, von Baeyer, Ware, & Cox, 1979), measuring locus of control. A copy of the cover letter and survey are provided in Appendix A.

The Multidimensional-Multiattributional Causality Scale was selected because of its validity and reliability with postsecondary students (Kanoy et al., 1989; Lefcourt et al., 1979) and its usability as a mailed survey instrument. Permission to use the scale was received from the authors.

Independent Variable Questions

The first two sections of the questionnaire provided data pertinent to measuring the independent variables. The first section gathered information on gender, major, years enrolled, and average credit hours taken per semester. It also asked for the students' cumulative University of Florida grade point average. The second section comprised 21 questions, 19 using a Likert-like scale, questioning the use and value of disability services, involvement in

specific social and cultural activities, faculty accommodations, support and value of mentors, and existence and value of a personal support network. The design was based on research on survey research (Fowler, Jr., 1993), suggestions by my doctorate committee, and on ideas from questionnaires used in a doctoral research study with a similar population at the University of Alabama (Mullins, 1995) and by Greenbaum et al.(1995).

Multidimensional-Multiattributional Causality Scale

The Multidimensional-Multiattributional Causality Scale comprised the third section of the questionnaire sent to students. The Multidimensional-Multiattributional Causality Scale (Lefcourt, 1981; Lefcourt et al, 1979) is a 24-item scale measuring four achievement attributions of locus of control of university undergraduates. The four achievement attributes are ability, effort, situation, and luck. The scale is comprised of 12 items that concern success and 12 that concern failure experiences. The 24 items are also divided equally, via the four attributes, such that there are six stable internal items focusing upon abilities and skills, six unstable internal items involving effort and motivation, six stable external items focusing on contextual characteristics, and six unstable external items that focus largely on fortuitous events. The possible range of scores is between 0 and 96, the Likert rating for each item being 0 to 4 with high scores reflecting externality. It is possible to derive a host of measures by combining various subscales. Most often the scale has produced overall scores

for each reinforcement area by adding internal attribution scores, ability and effort, with the equivalent external scores (Lefcourt, 1981).

The MMCS has been revised five times since its inception and has used in numerous studies. The behavioral data collected as validity for the scales is extensive, ranging from time perspective to social competence studies (Lefcourt, personal communication, May 1996). Four validity studies were described in a review of the instrument (Lefcourt et al., 1979). The first validity study was able to replicate the studies of other researchers studying the relationship between significant life changes from preschool years and statements of locus of control in adulthood as measures by Rotter's locus of control scale. A second experimental study, in 1975, focused on the behavior exhibited by 41 college students during an achievement relevant task. A main effect was found for achievement locus of control scores; achievement intervals also displayed a stable, slightly increasing mean percentage of time that students were engaged in adaptive behaviors as tasks became more difficult. The last two validity studies described investigated the involvement and social competence exhibited in social interactions as a function of locus of control for affiliation of college undergraduates. One, using 29 pair subjects, dealt with the verbal disclosure of their feelings about social gatherings. The later used 44 students in small group settings and was focused on the

presentation of clues by listeners that could facilitate the verbal productive of speakers. Norms developed from these studies of Lefcourt and associates are shown in Table 3-1.

Table 3-1
Normative Data for the MMCS Achievement Scales
(Lefcourt, 1996)

	Male (n=102)		Female (n=98)	
	M	SD	M	SD
A. Ability[a]	14.4	3.4	15.0	3.5
Effort	18.3	3.0	18.1	3.8
Context	13.4	4.0	12.6	3.7
Luck	12.0	4.3	11.6	4.6
B.[b] Internality	32.7	5.0	33.1	5.3
Externality	25.3	6.5	24.2	7.1
Success[c]	18.2	4.8	17.6	5.2
Failure[c]	22.5	5.7	21.5	6.1
Total Achievement[c]	40.7	8.0	39.1	9.1

[a] 6-item scales (0-24). Higher scores indicate higher endorsement of attribution
[b] 12-item scales (0-48)
[c] The higher the score, the more external

Measures of internal consistency of the MMCS were obtained from a number of samples. Cronback alphas were found to range between 0.58 and 0.80 for the achievement locus of control scale (externality-internality) while alphas for achievement internality ranged from 0.50 to 0.77 and externality from 0.66 to 0.88. Corrected Spearman-Brown split-half correlations ranged from 0.67 to 0.76 for achievement (Lefcourt, 1981). The average correlation between achievement items and the achievement locus of control scale was $r = 0.31$ ($N = 241$). The data seems to

support the discriminative validity of the items selected for each scale.

Temporal stability, assessed with intervals ranging from 1 week to 4 months, with the achievement locus of control test-retest correlations ranged from 0.51 to 0.62. The average correlation of achievement items and achievement locus of control score was 0.31. Intercorrelations between the four subscale scores was r = 0.06 for effort and ability, r = -0.06 for effort and situation, r = -.24 (p < .05) for effort and luck, r = 0.04 for ability and situation, r = 0.30 (p < .02) for ability and luck, and r = 0.48 (p < .001) for situation and luck. Factor analysis of the achievement locus of control revealed evidence supporting the author's assumed factorial structure of the scale (Lefcourt, 1981; Lefcourt et al., 1979).

The Multidimensional-Multiattributional Causality Scale has been assessed against the Rotter's I-E scale, a unidimensional scale of locus of control. In the four validity studies involving college students, the correlations ranged between 0.23 and 0.62 (Lefcourt et al., 1979). Other validity studies found that the behavior and affective responses in achievement tasks were also related to the locus of control scale (Lefcourt, 1981).

Further, Kanoy et al. (1989) found that the scale by Lefcourt et al. was useful in predicting the academic success of academically lower-performing college freshman. The researcher administered three instruments measuring

cognitive complexity, locus of control, academic self concept, and effort to 70 freshman at Peace College, a small 2-year liberal arts college. Scores from the instruments along with SAT scores and high school grade point averages were entered into a multiple regression model to predict the freshman-year grade point average of students expected to perform well, between 3.0 and 3.7, and those expected to perform in the 2.0 to 2.9 range. For the group expected to do well in college, the high school grade point average and academic self-concept formed the most powerful model, predicting 56% of the variance. However, for the lower performing group, the traditional predictors were ineffective. Rather, two psychological variables, internal locus of control for achievement successes and the amount of effort put into their work, both measured by the Lefcourt scale, accounted for 46% of the variance in grade point average.

Description of the Procedures

The procedure for selection of the items on the survey questionnaire were discussed previously in this chapter. Likert scales were printed at a physical length that facilitated easy measurement of the student's response using a millimeter scaled ruler.

A draft version of the instrument was pilot tested with eight students with and without learning disabilities enrolled at the University of North Florida and Florida Community College at Jacksonville. Their comments were

incorporated into the final instrument before it was distributed. Their comments suggested some rewording and layout that would improve the readability and understanding of the questions and scales.

The final instrument was printed back-to-back and was mailed with a cover letter, using letterhead of the office of Students Affairs, and an enclosed stamped, self-addressed envelope showing the address of the office of Student Affairs (see Appendix A). In an effort to ensure the privacy of the students and openness of their responses, a written consent was not asked for; rather the returned, completed questionnaire was to be an indication of permission to use the information provided. Each survey, however, was coded for follow-ups and to be able to match to university academic records. The numbers were recorded on a computer print-out, likewise provided by the Registrar's office, for the purpose of logging in surveys as they were returned.

As described prior in this chapter, questionnaires along with reminder letters and envelopes were mailed three times to students not responding to prior mailings. The mailings were each approximately 4 weeks apart.

Treatment of the Data

Data analysis was divided into two phases, descriptive and development of a multiple regression model. First, the data were analyzed to yield descriptive statistics on the sample and on the independent and dependent variables.

Second, appropriate statistical analysis and tests were conducted in respect to each hypothesis. Descriptive statistics for all variables under investigation included frequencies and percentages for categorical variables and means and standard deviations for continuous. Three averaged variables were generated--average value of support services, a composite of the values of tutoring, counseling, strategy skills, and faculty accommodations divided by four; average activity involvement in campus activities, a composite of seven questions on involvement in university culture; and achievement locus of control, the sum the value of the 12 externality statements (situation and luck) plus the sum of the value of the 12 internality statements (effort and ability). Missing data were not included in the calculation of means, medians, and standard deviations.

The second phase was the appropriate statistical analysis for each hypothesis. In each, significance was set at the $p < .05$ level and hypotheses were rejected if regression coefficients were significant. Further, correlations among independent variables as well as between dependent and independent variables were calculated. Correlations assisted in the summarization of the relationships between variables as well as assisted in identifying any multicollinearity between the independent variables. In the second phase, a composite model of the accepted hypotheses was developed using multiple regression analysis procedures (Chatterjee & Price, 1977).

Questionnaire responses were coded with a numerical value in order to run the analysis (see Appendix B). The independent variables were entered into the model simultaneously, using the SAS 6.01 statistical program, first using locus of control as the dependent variable and then using GPA as the dependent variable. Thus, the nine stated hypothesis were investigated through multiple regression techniques.

A composite of the nine hypothesis created two models of the relationship separately between cumulative grade point averages and locus of control and the independent variables of use of university-provided support services, personal support network, value of mentors, involvement in university-supported events and activities, and locus of control. The multiple regression models tested were $Y_{TOTLOC} = a + \beta X_{USEDIS} + \beta X_{VALMEN} + \beta X_{VALNET} + \beta X_{AVGACT} + E$ and $Y_{GPA} = a + \beta X_{USEDIS} + \beta X_{TOTLOC} + \beta X_{VALMEN} + \beta X_{VALNET} + \beta X_{AVGACT} + E$ with:

a	-	intercept
Y_{GPA}	-	the predicted grade point average
βX_{USEDIS}	-	the slope of accommodations and supports
βX_{TOTLOC}	-	the slope of total locus of control
βX_{VALMEN}	-	the slope of value of mentorships
βX_{VALNET}	-	the slope of impact of personal support networks
βX_{AVGACT}	-	the slope of involvement in activities and events
E	-	random error
Y_{TOTLOC}	-	the predicted total locus of control

CHAPTER FOUR
RESULTS OF THE STUDY

Introduction

The purpose of this research was to investigate theories related to the postsecondary academic success of students with learning disabilities as associated with the effects of university supports and accommodations provided students with disabilities and other variables suggested by theory, in particular the students' support systems, the role of mentors, involvement in university culture, and their self-determination. Cumulative university grade point average was one of the dependent variables. Locus of control was treated both as a dependent and an independent variable. Towards addressing this purpose, five questions were posed.

The first question (H1) was concerned with describing the relationship between academic success of university students with learning disabilities and (H6) locus of control and the usage they made of university-provided supports and accommodations. A second question (H2) was concerned with the relationship between self-determination of university students with learning disability and their academic success. This question was addressed using locus of control as a construct for self-determination. The third

question (H3) described the relationship between the academic success of university students with learning disabilities and (H7) locus of control and their development and use of personal support networks. A fourth (H4), investigated academic success and the role and support of mentors and (H8) locus of control and the role and support of mentors, and the last question addressed involvement in university-endorsed activities and events as (H5) it affected academic success and also (H9) its effect on locus of control.

Another aspect of the study, notwithstanding the questions posed above, was to better describe the profile of postsecondary students with learning disabilities. Besides a demographic profile, of particular interest were profiles of the use and value of specific university-provided supports and accommodations and types of areas and extent of participation in university-related activities and cultural events by students with learning disabilities.

Description of the Sample

Participants in this study consisted of students with learning disabilities enrolled at the University of Florida during the Fall session of 1996. A total of 237 students with learning disabilities were recorded by the university as having, as the only disability, a learning disability. A total of 221 survey packets (see Appendix A) were disseminated and 108 completed questionnaires (49%) were returned.

Of the students who returned the questionnaire, 53.7% (n = 58) were male and 46.3% (n = 50) were female. The mean number of years enrolled at the University of Florida was 2.6 years and 49.5% had never attended another postsecondary institution with 29.9% having attended a community college and 20.6% having attended another 4-year institution prior to the University of Florida. Eighty-eight percent (n = 95) of the 108 responding students enrolled for 10 to 15 credit hours per semester, a full-time load. The academic field with the largest number of students was liberal arts and social sciences (22.4%) followed by business at 19.6%. However, 35.5% indicated majors with emphasis on mathematics and the sciences (see Table 4-1).

Table 4-1
Enrollment by Degree Program

Program	N	%
Business/Accounting	21	19.6
Construction	1	4.6
Education	11	10.3
Engineering	9	8.4
Fine Arts	3	2.8
Liberal Arts & Social Science	24	22.4
Medical-Health related	19	17.8
Science & Mathematics	9	8.4
Other	11	9.3

The mean cumulative grade point average provided by students was 3.42 on a scale of 1 to 6, indicating a grade point average on the high end of the range of 2.50 to 2.99 provided on the questionnaire (see Table 4-2). Fifty-four

Table 4-2
Reported Grade Point Averages by Range

GPA Range	N	%
1.50-1.99	5	4.6
2.00-2.49	20	18.5
2.50-2.99	31	28.7
3.00-3.49	27	25.0
3.50-3.99	21	19.4
4.00 & over	3	2.8
NA	1	0.9

percent of the responding students reported their cumulative grade point average as falling within the questionnaire's 2.50 to 2.99 and 3.0 to 3.49 ranges. The accuracy of the student self-report was tested against grade point averages obtained from university records. The disclosed grade point averages of approximately one third of the students responding (n = 31), selected randomly, were compared with their grade point averages as provided by university records. For this group, the mean disclosed GPA was 3.48; the mean university grade point average was 3.23. Seventy-four (n = 23) marked a grade point average within the same questionnaire category range as provided by the university, 19% (n = 6) were one category range off, and 7% (n = 2) were two category ranges off. The correlational relationship between the two grades was r = 0.765, a significant (p < .05) and positive relationship.

Description of Generated Independent Variables

Two independent variables were generated from questions in the survey. Involvement in university culture, as an independent variable, was generated by totaling the Likert-

scaled responses on the seven sub-questions (athletics, clubs and organizations, fraternity/sorority, on-campus employment, student government, cultural activities, and sports events) in the question reporting cultural involvement (Question 10) (see Appendix B). This sum was then divided by seven and recorded to one decimal place. The second generated variable was achievement locus of control. Described more extensively in the following section, it was the sum of responses on 12 questions added to those on another 12 questions comprising the MMC scale. A third variable, the average value of support services, was also generated but was not used as a variable in the regression models. It was the sum of the responses to the four questions on specific supports and accommodations divided by four and recorded to one decimal place.

Description of Scales Scores

The MMCS is composed of subscales that are successively included in subscales that are higher in their level of abstraction. The items in Table 4-3 comprise each of the smallest subscales. These, when added to those of related subscales, form larger scales. The score for each of these basic subscales is the sum of their Likert ratings, scaled from agree (4) to disagree (0). Although a number of larger composites are possible by adding specific subscales together, only the Achievement Locus of Control was used in this study. Achievement Locus of Control (G) was the Achievement Externality scale (F) score added to the Achievement Internality scale (E) score.

Table 4-3
MMCS Achievement Locus of Control Subscales
Lefcourt, 1981.

Scale	Items
Subscales	
1. Effort Attribution for Success	22, 23, 24
2. Effort Attribution for Failure	25, 26, 27
3. Ability Attribution for Success	16, 17, 18
4. Ability Attribution for Failure	19, 20, 21
5. Situational Attribution for Success	28, 29, 30
6. Situational Attribution for Failure	31, 32, 33
7. Luck Attribution for Success	34, 35, 36
8. Luck Attribution for Failure	37, 38, 39
Composite Scales	
A. Achievement Effort	(1) + (2)
B. Achievement Ability	(3) + (4)
C. Achievement Situation	(5) + (6)
D. Achievement Luck	(7) + (8)
E. Achievement Internality	(A) + (B)
F. Achievement Externality	(C) + (D)
G. Achievement Locus of Control	(F) + (E)

Analysis of the Data

Descriptive Statistics

Students with learning disabilities responding to the questionnaire varied greatly in their use of university and faculty-provided supports and accommodations. Table 4-4 summarizes the use of specific services during their university enrollment along with the overall use of services and programs used as an independent variable.

The use of tutors, notetakers, and readers, listed as "tutoring" in Table 4-4, was a positively skewed distribution. Students who noted no use or very limited use of these services, 0.0 to 0.9 on the Likert-scale, totaled

57% (n = 57) of the 108 total. On the other hand, only 11.2% (n = 12) used these services most every semester, ranking 9.0 to 10.0 on the scale. The skewedness of use of supports is indicated by the disparity in the median of 0.40 and the mean of 2.76. In situations such as this, the median is considered to be a better measure than is the mean (Gravetter & Wallnau, 1988). Students made more use of academic and personal counseling with 46% (n = 46) making only very limited use and 9% (n = 10) using counseling services nearly every semester. The weakest use of specific services was in the area of learning and study skills strategy instruction, listed as "study skills." Sixty-six percent (n = 65) made very little or no use and only 4.6% (n = 5) made very continuous use. However, more students availed themselves to faculty provided accommodations. Only 22% (n = 22) rarely sought such accommodations, while 31.7% (n = 34) made continuous requests of the faculty. Further, this distribution was fairly normal.

Table 4-4
Use of Specific Disability Support Services

Service	Median	M[a]	SD
Tutoring	0.40	2.76	3.33
Counseling	2.00	2.89	3.59
Study skills	0.45	2.63	3.41
Faculty Accommodation	5.75	5.28	3.59
Overall Usage	4.60	5.35	3.04

[a] Scale of 0 (No use) to 10 (High).

The overall use of university support services and programs, listed as "overall usage," was likewise tabulated in Table 4-4. Although the specific supports, other than faculty accommodations, were positively skewed, overall use of services and programs approximated a fairly normal distribution. The mean use was 5.35 and the median was 4.6. Further, only 1.9% (n = 9) students rarely or never used the services, whereas 20.5% (n = 21) used the services most every semester.

Table 4-5
Value of Specific Support Services

Service	Median	M[a]	SD
Tutoring	0.90	3.83	3.93
Counseling	1.90	3.67	3.59
Study skill	0.35	2.63	3.40
Faculty Accommodation	6.40	5.89	3.62

[a] Scale of 0 (No use) to 10 (High).

Besides being asked to indicate their overall use services and programs along with the use of certain specific services, students were also asked to appraise the value of the services in meeting their academic and counseling needs. The results of this question are tabulated in Table 4-5. Students reported that, in general, the value received was greater than their use, although the positive skewness of the distributions indicated a limited received value on the part of many students.

One question, results from which would be totaled to create the averaged degree of involvement, dealt with student involvement in university supported social, athletic, and cultural activities. Specifically, seven areas of involvement, again from high (every semester) to no use, were listed on the questionnaire (see Table 4-6). The distributions of involvement in athletics, clubs, and sports events were bimodal, whereas distributions of membership in fraternities and sororities, on-campus employment, participation in student government, and attendance and participation in cultural events were positive skewed.

Table 4-6
Involvement in University Activities

Service	Median	M[a]	SD
Athletics	1.00	3.47	3.66
Clubs	3.25	4.66	3.64
Fraternity/Sorority	0.01	2.29	3.67
On-campus employment	0.40	2.20	3.35
Government	0.25	1.38	2.28
Cultural activities	0.55	2.32	2.66
Sports events	5.30	5.33	3.68

[a] Scale of 0 (No involvement) to 10 (High).

Little to no percentage of involvement ranged from a high of 74% (n = 74) for fraternity and sorority membership and in the participation in student government to the least 23% in sports events at 23% (n = 23). On the other end of the scale, heavy involvement was most apparent in sports events at 33.3% (n = 36) and with clubs at 23% (n = 27). Individual scores on the seven items were averaged to form a

generated composite independent variable, the average involvement in campus activities. The median of this variable was 2.83 and the mean was 3.1 with a standard deviation of 1.87.

A series of questions were concerned with developing an understanding of the individuals and their value as mentors and personal support networks, the both referred to as social ecology by Gerber et al. (1992). Further, a generated variable was developed averaging the responses to the perceived values of four specific support services. This variable was later correlated with the overall use of support services. The values of mentors and personal support networks were later introduced into the regression analysis. The results of the above are provided in Table 4-7. All three were normal in distribution.

Table 4-7
Value of Mentors, Personal Support Network, and University Support Services

Group	Median	M[a]	SD
Mentors	5.00	5.10	3.75
Network	8.70	7.78	2.62
Overall Support Services	3.53	3.96	2.62

[a] Scale of 0 (No value) to 10 (High).

The mean value of the influence various mentors had on academic success was 5.1 with a standard deviation of 3.75. Twenty-nine percent (n = 29) of the responding students stated that the role of mentors was of limited value and

20.3% (n = 22) believed their role to be a major factor in their academic success. Questioned as to who the mentors were, 35.2% reported departmental advisors, 19.4%--other faculty, 32.4%--student services personnel, and 25.9% listed other individuals.

The value of personal support networks seemingly played a greater role and showed less variability in facilitating academic success than did the value of mentorships. The mean value of support networks was 7.78 with a standard deviation of 2.62. Only 3% (n = 3) of the responding students noted that their personal support network had limited impact on their academic success, contrasting 52.6% who reported that their network had a major impact on their academic success. Individuals comprising the network were a spouse or family member (85%), a friend at the university (60.7%), a nonuniversity friend (51.4%), a university employee (25.2%), and someone other than the above four categories (9.3%).

Lastly, the overall value of support services, a composite of the individual values of the four specific support services, generated a mean of 3.96 with a standard deviation of 2.62 and a median of 3.53. As a composite, 13% (n = 13) incurred limited to no value toward academic success from these four services and 9.8% (n = 10) one generated a high value, again defined as laying between 9.0 and 10.0 on the scale.

Hypothesis Testing

Two correlation matrixes were generated. The first was a correlation between overall use of support services and students' perceived value of the average of four specific services, tutoring, counseling, strategy skills instruction, and faculty accommodations. Table 4-8 displays this correlation. The significant correlation between the two variables supported the inclusion of the use of support services over value of services as the preferred independent variable to be entered into the regression models. This decision was based on another factor. The university provided a greater variety of other accommodations and support services for students with learning disabilities than were listed on the questionnaire. Only four specific services were addressed in reference to their value to academic success, whereas usage questioned overall use of all support services and programs for students with learning disabilities.

Table 4-8
Correlation Matrix of Overall Use and Value of Support Services

Variable	Variable	
	Use	Value
Use	1.000	0.543
Value	0.543*	1.000

*Significant at $p < 0.0001$.

The second correlation run was between the independent variables and the dependent variables. The results are

provided in Table 4-9. The correlation coefficients describe the direction and the degree of relationship between the variables. As can be seen in the table, there was a negative relationship in four pairs of variables. Also, a significant relationship existed between four pairs of variables--use of support services (DIS) and value of mentors (MEN), use of support services (DIS) and involvement in university activities (ACT), value of mentors (MEN) and personal support network (NET), and grade point average (GPA) and personal support network (NET).

Table 4-9
Correlation Matrix of Independent and Dependent Variables

Variable	Variable					
	GPA	LOC	DIS	MEN	NET	ACT
GPA	1.00	-0.083	-0.016	-0.105	0.193*	-0.033
LOC			0.145	0.045	0.132	0.106
DIS				0.294*	0.088	0.222*
MEN					0.256*	0.124
NET						0.073
ACT						1.00

* Significant at $p < 0.05$.
GPA=Cumulative Grade Point Average
LOC=Locus of Control
DIS=Overall Use of Disability Services
MEN=Value of Mentors
NET=Value of Personal Support Network
ACT=Overall Involvement in University Activities

Also, a t-test was computed on the mean value of the locus of control scale for students in the study in comparison to the mean provided by the normative documentation provided by Lefcourt and associates (Lefcourt et al., 1979). The mean was 50.87 and the SD was 14.066 as

opposed to a M of 44.2 and a SD of 8.9 in his documentation. The t-test (t=7.51, df=106, p<.05) showed that this is a significant difference. Students with learning disabilities in this study exhibited a greater degree of externality than those used in the normative data, connoting a lesser degree of self-determination.

In order to describe the functional relationships among the variables, a multiple regression technique was used. Two regression models were generated, one using locus of control (LOC) as the dependent variable, and the second model using cumulative grade point average (GPA) as the dependent variable. Table 4-10 displays the results of the regression analysis using the LOC model and Table 4-11 describes the results of the regression analysis using the GPA model. The independent variables were entered simultaneously in the two models.

In the LOC model, no independent variables became part of the regression model. That is to say, that no significant relationships, at the 0.05 level of significance, existed for each of the four variables with the dependent variable, locus of control. The overall R^2 was 0.0440, indicating that the LOC model accounted for only 0.04 percent of the total variance. Therefore, based on the LOC model, the hypotheses H6, H7, H8, and H9 were not rejected.

Table 4-10
Variable Table of Multiple Regression Analysis--Locus of Control (LOC)

Source	df	Analysis of Variance Sum of Squares	Mean Square	F	Prob >F
Model	4	923.289	230.822	1.174	0.327
Error	102	20048.879	196.558		
Total	106	20972.169			

Root MSE	14.019	R-square	0.0440
Dep Mean	50.869	Adj R-sq	0.0065
C.V.	27.561		

Variable	df	Parameter Estimates Parameter Estimate	Std Error	T for HO: Parameter=0	Prob >T
INTERCEPT	1	40.6901	5.1699	7.871	0.0001
DIS	1	0.5715	0.4779	1.196	0.2346
MEN	1	-0.1396	0.3924	-0.356	0.7227
NET	1	0.7361	0.5387	1.366	0.1748
ACT	1	0.6848	0.7558	0.906	0.3671

DIS=Overall Use of Disability Services
MEN=Value of Mentors
NET=Value of Personal Support Network
ACT=Overall Involvement in University Activities

Table 4-11
Variable Table of Multiple Regression Analysis--Cumulative Grade Point Average (GPA)

Source	df	Analysis of Variance Sum of Squares	Mean Square	F	Prob >F
Model	5	12.882	2.576	1.697	0.142
Error	101	153.342	1.518		
Total	106	166.224			

Root MSE	1.232	R-square	0.0775
Dep Mean	3.429	Adj R-sq	0.0318
C.V.	35.924		

Variable	df	Parameter Estimates Parameter Estimate	Std Error	T for HO: Parameter=0	Prob> T
INTERCEPT	1	3.1980	0.5760	5.552	0.0001
DIS	1	0.0146	0.0423	0.366	0.7155
LOC	1	-0.0102	0.0087	-1.169	0.2450
MEN	1	-0.0555	0.0345	-1.608	0.1111
NET	1	0.1225	0.0477	2.565	0.0118*
ACT	1	-0.0009	0.0667	-0.014	0.9892

* Significant at $p < 0.05$.
DIS=Overall Use of Disability Services
LOC=Locus of Control
MEN=Value of Mentors
NET=Value of Personal Support Network
ACT=Overall Involvement in University Activities

The GPA model successfully entered one variable, the value of personal support network (NET). No other variables met the 0.05 significance level for entry into the model. The regression equation was Y = 3.1980 + 0.1225*NET. The total R^2 was 0.0775. Using the GPA model, only H3 was rejected; while H1, H2, H4, and H5 were not rejected.

Summary of the Findings

The results of the study suggest the use students with learning disabilities make of university and faculty provided services and accommodations; their involvement in athletic, social, and cultural activities sponsored by the university; the value of university mentors; or the impact of their personal support network are not predictive of their locus of control. On the other hand, a strong and valued personal support network was predictive of the academic success of students with learning disabilities.

Chapter Five discusses the data in terms of general student retention theory, theories of successful adults with learning disabilities, and self-determination theory. The chapter concludes with the implications the results of the study have to these models as well as for future research on postsecondary students with learning disabilities.

CHAPTER FIVE
DISCUSSION OF THE RESULTS AND IMPLICATIONS FOR FURTHER RESEARCH

Summary of the Study

Students with learning disabilities are now the fastest growing segment of the entering freshman classes in institutions of higher education in America (Henderson, 1995). Because of the impact of Section 504 of the Rehabilitation Act of 1973 and pressure from growing numbers of students with disabilities, their parents, adults with disabilities, and professionals, colleges and universities have moved to provide a variety of services and supports for students with disabilities (Yost et al., 1994). These accommodations comprise a number of possible accommodations by faculty, such as taping lectures and extending assignment and test times, and a variety of program services coordinated by student affairs offices, such as counseling, remedial education and learning strategies, tutors, and special purpose aids and equipment.

Although research data are beginning to provide some evidence that the accommodations and support programs developed by postsecondary institutions may, in aggregate, facilitate academic success for those who make use of the programs, few studies have been conducted that have studied the effects of specific supports and accommodations and

other variables not controlled by the institution on the academic and postgraduation successes of students with learning.

Vogel and Adelman (1992) and Shaw and associates (Brinckerhoff et al., 1992; Yost et al., 1994) theorized that a large degree of this success can be attributed to the service programs and accommodations currently being provided students with learning disabilities, coupled with the students' self-reliance and social abilities. Other researchers, including Greenbaum and associates (1995), have theorized that various noncognitive variables have a greater impact on success. Among these were (a) a family, peer, and mentor support system, (b) the understanding and acceptance of their abilities and disabilities coupled with a knowledge and use of existing college support services, and (c) the student's effort and determination. Their theory is in concert with a theory of adulthood success proposed by Gerber et al.(1992). The key theme in Gerber and associates model of success was control, the drive to manage one's life, which they suggested was the characteristic that provided the drive to be successful. Further, the theories of Tinto and of Astin also provided a basis of understanding and addressing this question. They suggested that student retention and success can also be attributed to involvement in the university culture and the support and mentorship of faculty.

The purpose of this research was to investigate the various theories related to postsecondary academic success of students with learning disabilities. The various factors put forth in these theories necessitated incorporating an efficient measure of self-determination, achievement locus of control, along with assessing the varieties of university-provided supports and accommodations offered to students with learning disabilities, and quality and variety of the student's involvement in the university culture, faculty and staff mentorship, and the impact of their personal support network.

Participants in this study consisted of students with learning disabilities enrolled at the University of Florida during the Fall session of 1996. A total of 237 students with learning disabilities were on the list. Eliminating students with invalid or unknown addresses, a total of 221 students with good addresses were mailed survey packets. In total, 108 completed questionnaires (49%) were completed and returned.

Research Instrumentation

Each student on the list received a cover letter and questionnaire. Both the cover letter and survey were written in accordance with University Institutional Board criteria and were approved by the Board on July 24, 1996. A copy of the cover letter and survey are provided in Appendix A. The survey consisted of questions related to the independent variables under investigation and the

Multidimensional-Multiattributional Causality Scale (MMCS) (Lefcourt et al., 1979), measuring locus of control. The Multidimensional-Multiattributional Causality Scale was selected because of its validity and reliability with postsecondary students (Kanoy et al., 1989; Lefcourt, 1981; Lefcourt et al., 1979) and its suitability of use in a mailed survey.

Discussion of the Results

Descriptive Profile of Students with Learning Disabilities

The study did not attempt to compare students with disabilities to their nondisabled peers. Yet, a descriptive profile of the students responding to the survey are probably not all that different from these peers. The great majority of the responding students were pursuing their study on a full time basis and were maintaining a grade point average within 2.5 to 3.5 range. Further, most were majoring in liberal arts and social sciences (22.4%), business (19.6), and medical-related programs (19%). This is also not very different from the data collected on graduates with learning disabilities at the University of Maryland (Greenbaum, Graham, & Scales, 1996). The researchers found that 36% majored in a liberal arts and social science discipline, 18% in business, and 10% in medical-related disciplines.

Involvement in university supported activities by students responding to survey, such as clubs, campus politics, fraternities or sororities, and athletics, was

very low. Only in their attendance of athletic events did students show a greater degree of involvement. Again, this may not be all that different from their nondisabled peers.

The data collected in this study, in part, suggests that many students with learning disabilities do not avail themselves of all of the accommodations and support programs offered to them. Although overall use of support services was fairly good, M of 5.35 on a 10 point scale, students seemingly did not make heavy use individually of the services of tutors, notetakers, and readers (M = 2.76), counseling services (M = 2.89), and strategy skills instruction (M = 2.63). The low use of the last service is understandable in that the university is only beginning to expand programs in this area. The other specific services seem to be low, especially in recognition that most postsecondary institutions generally place heavy emphasis on tutoring and counseling services (Mullins, 1995; Weiss & Repetto, in press; Yost et al., 1994). Moreover, some researchers have found that students tended to make a heavier use of tutoring than did the students participating in this study. Satcher and Adamson (1995), for instance found that "frequently/always" use of tutors was 51% and "frequently/always" of personal counseling was 31%. Also, Mullins found that students at a number of 2- and 4-year southeastern schools placed great value on tutoring, notetakers, and academic counseling services. On the other hand, the use of faculty-provided accommodations was very

similar between students involved in this study and those participating in the Satcher and Adamson study, 31% and 31.7%, respectfully.

Although information was gathered related to the usage and value of specific support activities, the study did not attempt to evaluate the effect of specific supports on academic success. A recent study (Keim et al., 1996), however, focused on the impact of some specific supports, faculty advisement, tutoring, use of computer laboratories, and test accommodations. The authors' results indicated that while the individual supports were helpful, their relationship to academic success, other than usage of computer laboratories, was not significant. The implication, the researchers suggested, was that postsecondary institutions should not remove support from these supports but rather institute a more comprehensive and encompassing supports program. On an overall level of support services for students with disabilities, the results of this study seem to support these conclusions in that use of support services did not enter into either model of academic success. Furthermore, the correlation between grade point average and use of disability services was negative, a r of -0.016.

Rather, the students in this study seemed to rely more on their personal support network, the only significant predictor of cumulative grade point averages. Although not entered into the regression model, the correlation of the

value of mentors was significantly related to the value placed on their personal support network and to the use of support services. These relationships are further discussed in the following sections relating theory to the findings.

Student Retention Theory

Although only the impact of personal support network was entered into the regression model, a significant correlational relationship existed between four pairs of variables--grade point average and personal support network, value of mentors and personal support network, value of mentors and use of support services, use of support services and campus cultural activities. The significant relationship between the value of mentors and personal support network seems to suggest that the interpersonal skills one develops and the active solicitation of valued individuals for guidance directly carry over to establishing a base of mentoring relationships on campus. Simply, an ease in building positive relations and the recognition of the importance they can have easily transfers from social setting to setting. On campus, most often these new supporters were members of the faculty. The last two pairs of significant correlational relationships seem to imply that involvement with faculty and staff mentors leads to a greater use of other support services provided by the university and, this, in turn, increases involvement in campus cultural activities.

The importance of these relationships is addressed in both Astin's theory on student involvement (1993) and in Tinto's theory on student attrition (1993). Both theories argue that greater participation in the various academic and social systems of the university community results in increased success in the community and a lesser desire to exit the university community. The key ingredient facilitating involvement, according to Tinto (1993), is developing quality relationships with peers. Sixty-five percent of the students participating in this study mentioned peers as important members of their network. The interplay with peers in fraternal, social, cultural, and athletic settings, Tinto offers, leads to greater involvement in the culture of the university community. A second key, again finding support in the findings of this study, is involvement with faculty. Taken together, the two key factors--collegiate peers and supportive faculty--assist students in coping with the demands of the college environment.

Adult Success Theory

There is considerable overlap of the factors facilitating success in the university community discussed above and those characteristics of successful adults in vocational and community settings. The results of this study are also in concert with the model of success of adults with learning disabilities developed by Gerber et al. (1990, 1992).

The only variable that addresses academic success, as determined in this study, suggests the importance of the impact of a personal support network on success within the university community. It is, likewise, one of the dominant elements presented in the model by Gerber and associates. It is also one of the three themes offered by Spekman et al. (1992) in their theory of adult success. The research supporting both models uncovered that successful adults surrounded themselves with people who could offer encouragement and guidance and provide certain skills they themselves were incapable of accomplishing. This is seemingly what the students who participated in this study are doing.

Self-determination Theory

The theory of self-determination suggests that the determination to take charge of one's life directly affects the quality of life's experiences and the degree of successes encountered (Schloss et al., 1993). This characteristic is present in the numerous studies of successful adults and students with learning disabilities and is the keystone in the conclusions reached by Gerber and his associates (Gerber et al., 1992). However, attitudes contributing to self-determination are not unidimensional as might be concluded from the definition of the term. Wehmeyer (1995) wrote that they "encompass personal perceptions and beliefs about oneself and one's control over the environment that have an impact on the degree to which

one is capable of becoming the primary causal agent in one's life" (p.158). Attitudes, he suggested, could be viewed from a number of constructs--self-awareness, self-esteem, self-confidence, self-esteem, and locus of control.

Researchers have developed a wealth of instruments that seek to measure a specific construct of self-determination. The application of the instruments has resulted in a better understanding of the theory, but an understanding lacking consistency as to the impact of the construct and the independent variable under study. Such was the case in this study. Locus of control, the construct used, was found not to significantly affect the cumulative grade point averages of university students with learning disabilities. Nor were the variables under investigation significantly related in describing one's level of locus of control. As elaborated on in Chapter Two, locus of control has, however, been found to be a useful construct of self-determination in a number of other studies. Further, Kanoy et al. (1989) found that locus of control, using the MMCS instrument, was a predictor of academic success of lower-achieving college students.

What factors result in research concluding that one construct is a better measure of overall self-determination than another construct as used within one setting, yet not in a similar but separate setting? Or that the use of a specific construct is found to be a significant descriptor in one study but not in another? The intent of this writer is not to attempt to provide answers. Rather, to suggest

that attempting to measure a number of constructs describing aspects of self-determination with a variety of different instruments is fraught with the potential of inconsistent results. Sattler (cited in Schloss et al., 1994) suggested, in reference to intelligence tests, that they may be inefficient predictors of functional outcomes and are not sensitive to solutions of daily activities if they fail to measure the processes underlying a response. Although speculative, this may likewise be operative in regard to measures of self-determination. Shavelson et al. (1976) endorsed this view, writing that until problems of definition, measurement, and interpretation have been resolved generalizations of findings in self-determination research will be severely limited and ambiguous. Yet, these possible concerns may limit the conclusions of a study but are not generally sufficient reason in and of themselves to reject the conclusions of a study using a specific instrument and construct of self-determination.

Implications of the Research Findings

The results of this investigation suggest that the use of university-provided support programs for students with learning disabilities, although fairly well utilized, does not directly affect academic success. Further, students placed greater useful value on faculty related accommodations than on tutoring and notetaking, counseling, or strategy skills instruction.

In a 1987, Jarrow wrote that little research had been conducted on the effectiveness of support programs (Jarrow, 1987). More recently, similar conclusions were offered by other authors who were not able to find any published research related to the effectiveness of specific services (Yost et al., 1994). The results of this study should not be seen as support to eliminate such programs across the board. The infancy of support services programming, federal legislation, and the lack of research speak to the inappropriateness of such drastic actions. Many programs and services are probably very effective, whereas others are not or may even be determintal.

Rather, the results of this study, in light of Yost and associates' position and the recently published study by Keim, strongly suggest that postsecondary institutions need to begin evaluating the effectiveness of all aspects of their support services for students with learning disabilities and, based on these findings, redesign the array of services so as to better serve the needs of the intended population.

One area of promise is to better address the social-emotional and self-advocacy needs of students with learning disabilities (Cullen et al., in press). Moving in this direction, decreasing service emphasis is given to academic tutoring in favor of a more comprehensive program of supports and services. Further, comprehensive programs, by their very nature, entail a proactive approach, grounded in

theories offered by Brinckerhoff, Shaw, and their associates (Brinckerhoff et al., 1993; Cullen et al., in press) and Vogel (1990) that offer assistance in improving learning strategy, social, interpersonal skills, self-determination and self-advocacy.

A second implication of the findings of this study is the importance that the role social ecology, ones' personal support network and mentors, plays in the academic success of students with learning disabilities, both in postsecondary settings and in their success after graduation. Postsecondary institutions cannot directly assist students in establishing friends, but they can assist the nurturing of this network in two areas. First, postsecondary institutions can provide programs that promote self-esteem and interpersonal skills. Success in vocational and academic settings is becoming as much built on a foundation of strong interpersonal skills as it is on vocational skills and knowledge. Program goals should address understanding strengths and weaknesses, improving effective communications, building goal-setting skills, and teaching problem-solving abilities. An example of such a program is that of the University of Connecticut's Program for College Students with Learning Disabilities. This program is based on a three-step system towards increasing student independence, direct skills and strategy instruction, monitoring of student progress, and consultation (Shaw, 1996).

Another area is the need to address the professional standards of the support staff and organizational structure in this young field. The Association on Higher Education and Disability (AHEAD) has proposed specific standards in five areas, administration, direct services, consultation/collaboration, institutional awareness, and professional development (Shaw, 1996).

Secondly, the interaction between students and faculty and with their peers can further support the formation of a valued social ecology. Postsecondary institutions can assist this process by promoting involvement in cultural, social, and sports activities. Friendships may not be able to be forced, but the mere increase in interactions with peers and college advisors may well lead to the building of quality friendships and mentoring relationships. It is also incumbent on postsecondary institutions to actively work with faculty, providing them with the tools, understanding, and knowledgeable assistance to be a positive, rather than a negative or neutral, advocate to students with learning disabilities. Researchers have found that in-service programs can provide faculty with a better understanding of the special learning styles and needs of students with learning disabilities and introduce them to effective teaching strategies along with simple adjustments and accommodations. These suggestions, while not compromising academic standards, can accouter students with the tools to

facilitate their success. Therefore, formal faculty in-service efforts must be scheduled for each academic session.

Recommendations for Future Research

The results of this study demonstrate that far more research must be conducted on the levels and causes of academic success of students with learning disabilities in postsecondary settings. The only variable that significantly described academic success was the impact of a personal support network. This finding is supported by the research of others, yet does not support the research conclusions of others. Further, this study did not, nor could it have, address other issues related to providing quality support services and accommodations to the growing numbers of students with learning disabilities in postsecondary settings and how to implement a university culture and structures that would facilitate academic success on the part of these students. Toward this end, I would recommend a number of specific areas.

First, further work needs to be addressed to the understanding of self-determination and the various constructs of self-determination. The results of this study seem to indicate that self-determination, as measured by a locus of control construct, does not appreciably predict academic success. Others have come to similar conclusions, preferring other constructs. Yet, still others, using the same instrument, have suggested otherwise. Another part may be, as Shavelson and associates suggested, that it is

difficult to generalize across studies using different instruments (Shavelson et al., 1976). Part of the problem is that self-determination is multifaceted. It is evident, in light of the increasing importance being placed on emphasizing self-determination in high school and university learning disability programs, that increased effort be given to understanding this trait.

Second, a number of problems seem to exist in the current provision of services and accommodations. Some services, such as subject area tutoring, may tend to continue the dependence of students with learning disabilities on the supports of others. Further, few programs address the recognized need to strengthen the student's social skills. Last, faculty, who have a major influence over the development of their students, often have not been provided the necessary information and support to be able to more successfully teach and advise students with learning disabilities. I would recommend that sound research studies addressing these issues be conducted at a number of institutions. The studies should be cooperative investigations or, at least, use specific key marker variables in order for reliable comparisons to be make across studies.

I would also recommend that further study be devoted to the impact of mentors and personal support networks. The value of these is noted in a number of studies, for instance Gerber et al. (1992), Greenbaum et al. (1995), and Tinto

(1993). Moreover, other researchers have suggested that these two factors impact on a student's level of self-determination (Hoffman & Field, 1995; Wehmeyer, 1995). Systematic investigation of these relationships needs to continue. Additionally, continuing work should be devoted to developing support mechanisms and strategies that facilitate the underlying psychology supportive of enhancing the roles of mentors and significant members in one's social ecology.

Fourth, institutions of higher education need to investigate their role in facilitating the transition process from high school to postsecondary education for students with learning disabilities. Little attention generally seems to have been given to the transition-in aspect of Siperstein's model of postsecondary transition. Related to this is the need to investigate the breath and effectiveness of student recruitment programs.

Finally, the economy of the United States is continuing to be transformed into a service and information-oriented economy. At the same time, the population as a whole is becoming older and more diverse. Together, these factors, coupled with a heavy national debt, necessitate that all citizens be involved as much as possible in both an economic and social sense. Thus, I would recommend that continuing qualitative investigations be conducted into the success patterns and the techniques, strategies, and adaptations used by successful adults with learning disabilities.

Particular attention might further investigate specific strategies and adaptations in light of personality characteristics of the individual and organizational culture and environment within which the individual must function.

Summary

This study was conducted to investigate the relationship between college academic successes of university students with learning disabilities and specific key variables that theories have suggested to be potential factors of success. To do this, the study investigated the influences of institutional accommodations and services provided for them, locus of control as a construct of self-determination, interaction with peers and university employee mentors, student involvement in collegiate activities and events, and personal support networks.

The results of this study indicate that, at least for some students in postsecondary settings, building a strong and viable network of understanding and supportive individuals is the most important determinate of academic success. The support of university peers, whether faculty or peers, along with the university's various supports and faculty accommodations may be somewhat related to academic success, but it is the personal support network that makes the measurable difference between academic success and failure for students with learning disabilities.

In light of the results of this study, there is an immediate and pressing need to replicate this study at other

institutions of higher education and to continue research directed at designing more effective support programs for the valued and growing numbers of students with learning disabilities enrolled in these institutions.

APPENDIX A
SURVEY PACKET

Cover Letter

Dear Student:

The Office of Students with Disabilities at the University of Florida is cooperating with Keith Weiss in a study on some of the factors that may be related to the academic successes of students with learning disabilities at the University of Florida. Keith Weiss is a doctoral student at the University in the area of special education. His major interest is in support services for college students with learning disabilities. His supervisor is Dr. Jeanne Repetto, Department of Special Education, at 392-0701, 251.

The attached questionnaire is part of his study. This information will be used to better understand how certain factors, such as use of student support services, involvement in college activities, personal support systems and friends, and self-determination, increase the academic success of students with learning disabilities while at the University. The results of his study should be helpful in improving services for students with learning disabilities here at the University of Florida and services at other universities and colleges.

The information you provide in this study will be used in a professional manner for educational purposes. Your name and personal information will remain confidential to the extent provided by law. Your name will not be on the questionnaire. I have assigned an identification number to each questionnaire. The identification number is only for follow-up purposes. After a few weeks, if I have not received your questionnaire a second will be mailed to you. At the end of data collection, the identification list will be destroyed. This means that no one will be able to match your answers with your name.

You, of course, are free to not respond to this questionnaire. If you have any questions or concerns regarding this study, feel free to call me at the above phone number or call Keith Weiss at (352) 392-0701, ext. 291. Questions or concerns about the research participantÕs rights can be directed to the UFIRB office, PO Box 112250, University of Florida, Gainesville, FL 32611-2250.

Please take a couple of minutes now to complete the attached questionnaire and return it in the self-addressed, stamped envelope provided for your use. In an effort to ensure your privacy, you will not be asked for your written consent;

rather the returned, completed questionnaire will be used as an indication of permission to use the information in the study by Keith Weiss.

Thank you for your prompt help in this study. Your response may help to improve services for students with disabilities. This questionnaire is also available in an alternate form. Please call Rick Nelson at 392-1271 for an audio format.

James Costello
Assistant Dean

Keith E. Weiss
Graduate Assistant

Follow-up Letter

Dear Student,

Your completed questionnaire related to disability student services has not been received. If you have already returned it, thank you for your help. If you have not returned it, please take the time now to do so. A copy of the questionnaire and envelope are included with this letter. Complete just one questionnaire and mail.

I greatly appreciate your help in this manner. If you have any questions, please feel free to call me at my number or Keith Weiss in the Department of Special Education at (352)392-0701, ext.291.

Thank you,

James Costello

Keith Weiss

Student Services Questionnaire

Confidential ID #_____

I. Please provide the following information about yourself.

1. Gender: _____ Male _____Female

2. What is your current total UF G.P.A.?

_____ 4.00 or over
_____ 3.99-3.50
_____ 3.49-3.00
_____ 2.99-2.50
_____ 2.49-2.0
_____ 1.99-1.50

3. In what degree program are you currently majoring?

_____ Business/Accounting
_____ Construction
_____ Education
_____ Engineering
_____ Fine Arts
_____ Liberal Arts & Social Sciences
_____ Medical-Health Related
_____ Science & Mathematics
_____ Other (please specify) _____

4. How many years have you been enrolled at UF?

_____ 1 yr or less
_____ 2 yrs
_____ 3 yrs
_____ 4 yrs
_____ 5 yrs
_____ 6 or more years

5. Did you attend another college or university first before enrolling at UF?

_____ No
_____ 2-year community college
_____ 4-year college or university

6. On an average, how many credit hours do you take a semester?

_____ 3-6 credit/hours
_____ 7-9 credit/hours
_____ 10-12 credit/hours
_____ 13-15 credit/hours
_____ 16+ credit/hours

II. Use of UF Disability Services

7. The University of Florida provides various support services and programs for students with learning disabilities. Place an 'x' somewhere on the line that best describes your overall use of these supports.

High (most every semester)	Medium (about half the semesters)	Low (only when necessary or rarely)	No Use
|_____|			

8. Listed below are some specific supports offered students with learning disabilities. In general, how often do you use each service? Plase an 'x' somewhere on the line that best describes the amount or level of usage you make of that listed service.

	High (most every semester)	Medium (about half the semesters)	Low (only when necessary or rarely)	No Use
Tutoring, Notetaker & Readers	|_____|			
Academic & personal counseling	|_____|			
Learning & study skills strategy instruction	|_____|			
Faculty-provided accommodations	|_____|			

9. In general, how useful do you think each service is in meeting your needs at UF? Place an 'x' somewhere on the line that best describes how useful you think each service has been to your academic success at UF.

	High (most every semester)	Medium (about half the semesters)	Low (only when necessary or rarely)	No Use
Tutoring, Notetaker & Readers	|_____|			
Academic & personal counseling	|_____|			
Learning & study skills strategy instruction	|_____|			
Faculty-provided accommodations	|_____|			

10. What social and cultural activities have you been involved with while at UF? Place an 'x' somewhere along the line that best describes your involvement in each of these university activities.

	High (most every semester)	Medium (about half the semesters)	Low (only when necessary or rarely)	No Use
Athletics				
Clubs or organizations				
Fraternity/Sorority				
On-campus employment				
Student government				
UF cultural activities				
UF sports events				

11. In general, how have your requests for personal accommodations been received by most of the instructors you took? Place an 'x' somewhere along the line that best describes the general acceptance of your requests by faculty.

Very Accepting	Moderate Acceptance	Low Acceptance	No Acceptance

11. Do you have a specific person(s) that you can talk to for advice, support, or assistance if you have an academic or personal problem?

_____ No _____ Yes and the person(s) is/are:
_____ my academic advisor in the department
_____ another faculty member
_____ a staff member in Student Services
_____ Other (describe) _____

12. In general, what effect or influence does this person(s) have on your academic success at UF? Place an 'x' somewhere along the line that best describes this influence.

Major	Medium	Limited

Major factor: I would have a hard time without them.
Medium factor: They are helpful, but I would make it anyway. It would just have been harder.
Limited: I would be just as successful without their support.

13. While at UF, have you had a personal support network, that is family or friends, that you can count on for financial assistance, emotional support, encouragement, advice, or any other necessary assistance?

_____ No _____ Yes and the support is composed of (check all that apply):
_____ a family member or guardian
_____ a good friend at UF
_____ a good friend not at UF
_____ an employee of UF
_____ Other (describe) _____

14. In general, how important has your personal support network been to your academic success at UF? Place an 'x' somewhere along the line that best describes the support given.

Major **Medium** **Limited**
|_____|

Major factor:	I would have a hard time without them.
Medium factor:	They are helpful, but I would make it anyway. It would just have been harder.
Limited:	I would be just as successful without their support.

III The statements in this last section ask for your opinions on a number of issues. Your reactions should reflect your own opinions. There are no right or wrong answers.

Indicate how much you agree or disagree with each statement by placing a ✓ beside the letter corresponding to your choice:

A: I agree
B: I mildly agree
C: I agree and disagree equally
D: I mildly disagree
E: I disagree

(Note: For this appendix, only the questions are listed.)

If you have mixed feelings about an item, decide whether you lean slightly more to one side than the other. Try to avoid the middle (C) response. Remember that the best answer is whatever your personal opinion is. Your first reaction to an item is usually the one that best reflects your view.

15. The most important ingredient in getting goods grades is my academic ability

16. I feel that my good grades reflect directly on my academic ability.

17. When I get good grades, it is because of my academic competence.

18. If I were to receive low marks, it would cause me to question my academic ability.

19. If I were to fail a course, it would probably be because I lacked skill in that area.

20. If I were to get poor grades, I would assume that I lacked ability to succeed in those courses.

21. In my case, the good grades I receive are always the direct result of my efforts.

22. Whenever I receive good grades, it is because I have studied hard for that course.

23. I can overcome all obstacles in the path of academic success if I work hard enough.

24. When I receive a poor grade, I usually feel that the main reason is that I haven't studied enough for that course.

25. When I fail to do as well as expected in school, it is often due to a lack of effort on my part.

26. Poor grades inform me that I haven't worked hard enough.

27. Some of the times that I have gotten a good grade in a course, it was due to the teacher's each grading scheme.

28. Some of my good grades may simply reflect that these were easier courses than most.

29. Sometimes I get good grades only because the course material was easy to learn.

30. In my experience, once a professor gets the idea you're a poor student, your work is much more likely to receive poor grades than if someone else handed it in.

31. Often my poor grades are obtained in courses that the professor has failed to make interesting.

32. Some low grades I've received seem to me to reflect the fact that some teachers are just stingy with marks.

33. Sometimes my success on exams depends on some luck.

34. I feel that some of my good grades depend to a considerable extent on chance factors, such as having the right questions show up on an exam.

35. Sometimes I feel that I have to consider myself lucky for the good grades I get.

36. Some of my lower grades have seemed to be partially due to bad breaks.

37. My academic low points sometimes make me think I was just unlucky.

38. Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time.

Thank you very much for your time and honest answers and views. Please return your completed questionnaire using the self-addressed stamped envelope that was included with the questionnaire.

Keith Weiss
University of Florida
Department of Special Education
P.O. Box 117050
Gainesville, FL 32611-7050
(352) 392-0701, Ext. 269

If you would like to make any additional comments regarding these questions or your experiences related to your learning disabilities with faculty or student service staff, please use the back side of this page to do so.

APPENDIX B
QUESTIONNAIRE CODING

Coding

1. Gender
   0 = male
   1 = female

2. What is your current UF GPA?
   6 = 4.00 or over
   5 = 3.99 - 3.50
   4 = 3.49 - 3.00
   3 = 2.99 - 2.50
   2 = 2.49 - 2.00
   1 = 1.99 - 1.50

3. In what degree program are you currently majoring?
   1 = business/accounting
   2 = construction
   3 = education
   4 = engineering
   5 = liberal arts & social sciences
   6 = fine arts
   7 = medical-health related
   8 = science & mathematics
   9 = other

4. How many years have you been enrolled at UF?
   1 = 1 yr or less
   2 = 2 yrs
   3 = 3 yrs
   4 = 4 yrs
   5 = 5 yrs
   6 = 6 or more years

5. Did you attend another college or university first before enrolling at UF?
   1 = no
   2 = 2 year community college
   3 = 4 year college or university

6. On the average, how many credit hours do you take a semester?
   1 = 3 - 6 credit/hours
   2 = 7 - 9 credit/hours
   3 = 10 - 12 credit/hours
   4 = 13 - 15 credit/hours
   5 = 16+ credit/hours

7. The University of Florida provides various support services and programs for students with learning disabilities. Place an "x" somewhere on the line that best describes your overall use of these supports.
   Scale of 0 to 10 used, taken to one decimal place

8. Listed below are some specific supports offered students with learning disabilities. In general, how often do you use each service? Place a "x" somewhere on each line that best describes the amount or level of usage you make of that listed service.
   8.1. Tutoring, Notetaker, & Readers
   8.2. Academic & personal counseling
   8.3. Learning & study skills strategy instruction
   8.4. Faculty-provided accommodations
   Scale of 0 to 10 used, taken to one decimal place

9. In general, how useful do you think each service is in meeting your needs at UF? Place a "x" somewhere on lines that best describes how useful you think each service has been to your academic successes at UF.
   9.1. Tutoring, Notetaking & Readers
   9.2. Academic & personal counseling
   9.3. Learning & study skills strategy instruction
   9.4. Faculty-provided accommodations
   Scale of 0 to 10 used, taken to one decimal place

10. What social and cultural activities have you been involved with while at UF? Place an "x" somewhere along each line that best describes your involvement in each of these university activities.
    10.1. Athletics
    10.2. Clubs or organizations
    10.3. Fraternity/Sorority
    10.4. On-campus employment
    10.5. Student government
    10.6. UF cultural activities
    10.7. UF sports events
    Scale of 0 to 10 used, taken to one decimal place

11. In general, how have your requests for personal accommodations been received by most of the instructors you took? Place an "x" somewhere along the line that best describes the general acceptance of your requests by faculty.
    Scale of 0 to 10 used, taken to one decimal place

12. Do you have a specific person(s) that you can talk to for advice, support, or assistance if you have an academic or personal problem?

    0 = no
    1 = yes

12.1. my academic advisor in the department.
12.2. another faculty member.
12.3. a staff member in Student Services.
12.4, other
0 = no check
1 = check

13. In general, what effect or influence does this person(s) have on your academic success at UF? Place an "x" somewhere on the line below that best describes this influence.
Scale of 0 to 10 used, taken to one decimal place

14. While at UF, have you had a personal support network, that is family or friends, that you can count on for financial assistance, emotional support, encouragement, advice, or any other necessary assistance?
0 = no
1 = yes

14.1. a family member or guardian.
14.2. a good friend at UF.
14.3. a good friend not at UF.
14.4. an employee of UF.
14.5. other
0 = no check
1 = check

15. In general, how important has your personal support network been to your academic success at UF? Place an "x" somewhere along the line that best describes the support given.
Scale of 0 to 10 used, taken to one decimal place

16. - 39. locus of control scale
4 = agree
3 = mildly agree
2 = agree and disagree equally
1 = mildly disagree
0 = disagree

Generated Variables

Average value of support services - sum of (9.1, 9.2, 9.3, & 9.4) divided by 4 and taken to one decimal place

Average involvement in activities & events - sum of (10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7) divided by seven and taken to one decimal place

Total locus of control - (sum of 28...39) plus (sum of 16...27)

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BIOGRAPHICAL SKETCH

The early years in the life of Keith Weiss were filled with transition from one city or country to another. Growing up in an Army family necessitates frequent moves. From a birth in Milwaukee, Wisconsin, to a more or less general settlement in Florida in his late teens, Keith lived in eight states and two foreign countries and was educated in over 14 schools before graduating from high school in Jacksonville, Florida.

Following graduation, he joined the Florida Army National Guard, attending Officer Candidate School while enrolled at Jacksonville University in Jacksonville in a political science program. After graduation, Mr. Weiss attended Florida State University, pursuing a master's in political science. Upon graduation, he was appointed as an instructor in a recently formed community college, Valencia Community College in Orlando, Florida. Here he taught for 3 years before being offered and accepting a newly created administrative position charged with institutional research. While teaching, he and Ronald Reininghaus collaborated on publishing a participatory study guide on American government for Wadsworth Publishing Company. During the next 4 years, Mr. Weiss was instrumental in developing the basis for a comprehensive management information system and one of the first computerized course scheduling systems in the Florida community college system. He also represented

the college on various college and state committees, two of which were the state committee on developing a standardized course numbering system and the Inter-Institutional Research Council, centered at the University of Florida.

In 1973, Mr. Weiss resigned his position to enter into the construction business with his father, who was now retired from the Army and was in a senior management position with a major Florida multifamily developer in Jacksonville. Unfortunately, the two were not very compatible in a business setting and Keith left taking a 1-year temporary teaching position at Florida Community College at Jacksonville.

At the end of the year, Mr. Weiss was offered a field sales position with NTRON Sales International of San Rafael, California. The company was the third largest manufacturer of muscle stimulation and transcutaneous electrical devices in the world. It had a sales staff of over 40 representatives. In this position, he represented the company within a north Florida and south Georgia area, calling on hospitals, physical therapists, and physicians. In the last 5 years with the company, he was also given a joint duty as sales trainer for the southeastern United States. In this capacity he worked with over 12 new representatives in becoming familiar with the product line, their territory, and company sales presentations. In 1989, with NTRON being sold to a competitor, Mr. Weiss separately joined forces with another representative of NTRON and another independent manufacturer's sales agent to establish two independent medical representative operations, one

oriented toward rehabilitation and physical therapy areas and the other in critical care. Over the next 5 years, he functioned both as an independent manufacturer's representative for a variety of national and regional medical equipment and disposables manufacturers and a stocking dealer of physical therapy products and equipment, under the name of TRUMED Medical Services. He was also a partner in an off-shore manufacturing operation, American Medical Products, designing their urological drainage bag, and Atlantic Rehabilitation, a physical and occupational contract service to hospitals and nursing homes in Georgia.

It was during these 15 years that Mr. Weiss became directly involved in assisting people with physical and neurological impairments. This interaction and the recognition of their needs, limitations, and great capabilities, led him to the decision to return to education. After a year's worth of full-time study in special education at the University of North Florida, he applied to and was accepted into a doctorate program in the area of transition studies within the Department of Special Education at the University of Florida under a grant with the *Florida* Network. During the 3 1/2 years working with the Network on various research and training projects along with a doctoral program, he coordinated two major committees and was lead author on an adult services agency guide and a postsecondary educational support services guide on community colleges and area vocational schools in Florida, both published by the State of Florida. Also, collaborating with various faculty in the department, he was senior author

on six articles accepted for publication in national referreed educational journals. Besides a strong interest in postsecondary transition programs and services for students with disabilities, he has pursued interests in distance education and adult education programming.

In October of 1996, Mr. Weiss accepted a position as assistant director of Career Placement and Cooperative Education at the University of New Orleans. He is currently completing three articles on career services for students with learning disabilities, marketing cooperative education, and court positions regarding pediatric physical therapy services for children with disabilities and has submitted an article on evaluation and distance education to the Journal of American Distance Education.

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